# Rene Descartes

# Discourse on the Method for Reasoning Well and for Seeking Truth in the Sciences

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**HISTORICAL NOTE**

René Descartes (1596-1650) published *Discourse on Method* in 1637 as part of a work containing sections on optics, geometry, and meteorology. The fourth section, the *Discourse*, outlined the basis for

a new method of investigating knowledge. He later (in 1641) published a more detailed exploration of the philosophical basis for this new approach to knowledge in *Meditations on First Philosophy*.

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**Notes**

# RENÉ DESCARTES
# DISCOURSE
# ON
# METHOD

**[PREFACE]**

**(1)**

If this discourse seems too long to be read in a single sitting, it can be divided up into six parts. In the first will be found various considerations concerning the sciences; in the second, the principal rules of the

method
which
the
author
has
discovered;
in
the
third,
some
rules
of
morality
which
he
has
derived
by
this
method;
in
the
fourth,
the
reasons
which
enable
him
to
establish
the
existence
of
God
and
of
the
human
soul,
which
are
the
foundations
of
his
metaphysics;
in
the
fifth
part,
the
order
of
questions
in

physics
which
he
has
looked
into,
and
particularly
the
explanation
for
the
movements
of
the
heart
and
for
some
other
difficulties
which
are
part
of
medicine,
including
the
difference
which
exists
between
our
souls
and
those
of
animals;
in
the
last
part,
some
matters
he
believes
necessary
for
further
advances
in
research
into
nature,
beyond

where
he
has
been,
along
with
some
reasons
which
have
induced
him
to
write.

## PART ONE

The
most
widely
shared
thing
in
the
world
is
good
sense,
for
everyone
thinks
he
is
so
well
provided
with
it
that
even
those
who
are
the
most
difficult
to
satisfy
in
everything
else
do
not

usually
desire
to
have
more
good
sense
than
they
have.
In
this
matter
it
is
not
likely
that
everyone
is
mistaken.
But
this
is
rather
a
testimony
to
the
fact
that
the
power
of
judging
well
and
distinguishing
what
is
true
from
what
is
false,
which
is
really
what
we
call
good
sense
or
reason,

is
naturally
equal
in
all
men,
and
thus
the
diversity
of
our
opinions
does
not
arise
because
some
people
are
more
reasonable
than
others,
but
only
because
we
conduct
our
thoughts
by
different
routes
and
do
not
consider
the
same
things.
For
it
is
not
enough
to
have
a
good
mind.
The
main
thing
is

to
apply
it
well.
The
greatest
minds
are
capable
of
the
greatest
vices
as
well
as
the
greatest
virtues,
and
those
who
proceed
only
very
slowly,
if
they
always
stay
on
the
right
road,
are
capable
of
advancing
a
great
deal
further
than
those
who
rush
along
and
wander
away
from
it.

As
for

myself,
I
have
never
presumed
that
my
mind
was
anything
more
perfect
than
the
ordinary
mind.
I
have
often
even
wished
that
I
could
have
thoughts
as
quick,
an
imagination
as
clear
and
distinct,
or
a
memory
as
ample
or
as
actively
involved
as
some
other
people.
And
I
know
of
no
qualities
other
than

these
which
serve
to
perfect
the
mind.
As
far
as
reason,
or
sense,
is
concerned,
given
that
it
is
the
only
thing
which
makes
us
human
and
distinguishes
us
from
the
animals,
I
like
to
believe
that
it
is
entirely
complete
in
each
person,
following
in
this
the
common
opinion
of
philosophers,
who
say
that

differences
of
more
and
less
should
occur
only
between *accidental*
*characteristics* and
not
at
all
between
the *forms* or
natures
of *individuals* of
the
same *species*.

But
I
will
not
hesitate
to
state
that
I
think
I
have
been
very
fortunate
to
have
found
myself
since
my
early
years
on
certain
roads
which
have
led
me
to
considerations
and
maxims
out

of
which
I
have
created
a
method
by
which,
it
seems
to
me,
I
have
a
way
of
gradually
increasing
my
knowledge,
raising
it
little
by
little
to
the
highest
point
which
the
mediocrity
of
my
mind
and
the
short
length
of
my
life
can
allow
it
to
attain.
For
I
have
already
harvested
such

fruit
from
this
method
that,
even
though,
in
judging
myself,
I
always
try
to
lean
towards
the
side
of
distrust
rather
than
to
that
of
presumption
and
although,
when
I
look
with
a
philosopher's
eye
on
the
various
actions
and
enterprises
of
all
men,
there
are
hardly
any
which
do
not
seem
to
me
vain

and
useless,
I
cannot
help
deriving
extreme
satisfaction
from
the
progress
which
I
think
I
have
already
made
in
my
research
into
the
truth
and
conceiving
such
hopes
for
the
future
that,
if
among
the
occupations
of
men,
simply
as
men,
there
is
one
which
is
surely
good
and
important,
I
venture
to
think
it

is
the
one
I
have
chosen.

However,
it
could
be
the
case
that
I
am
wrong
and
that
perhaps
what
I
have
taken
for
gold
and
diamonds
is
only
a
little
copper
and
glass.
I
know
how
much
we
are
subject
to
making
mistakes
in
what
touches
ourselves
and
also
how
much
we
should

beware
of
the
judgments
of
our
friends
when
they
are
in
our
favour.
But
I
will
be
only
too
happy
to
make
known
in
this
discourse
what
roads
I
have
followed
and
to
reveal
my
life
in
it,
as
if
in
a
picture,
so
that
each
person
can
judge
it.
Learning
from
current
reports
the

opinions
people
have
of
this
discourse
may
be
a
new
way
of
educating myself,
something
I
will
add
to
those
which
I
habitually
use.

Thus,
my
design
here
is
not
to
teach
the
method
which
everyone
should
follow
in
order
to
reason
well,
but
merely
to
reveal
the
way
in
which
I
have
tried
to

conduct
my
own
reasoning.
Those
who
take
it
upon
themselves
to
give
precepts
must
consider
themselves
more
skilful
than
those
to
whom
they
give
them,
and
if
they
are
missing
the
slightest
thing,
then
they
are
culpable.
But
since
I
intend
this
text
only
as
a
history,
or,
if
you
prefer,
a
fable,
in
which,

among
some
examples
which
you
can
imitate,
you
will,
in
addition,
perhaps
find
several
others
which
you
will
have
reason
not
to
follow,
I
hope
that
it
will
be
useful
to
some
people,
without
harming
anyone,
and
that
everyone
will
find
my
frankness
agreeable.

I
was
nourished
on
literature
from
the
time
of
my

childhood.
Because
people
persuaded
me
that
through
literature
one
could
acquire
a
clear
and
assured
understanding
of
everything
useful
in
life,
I
had
an
intense
desire
to
take
it
up.
But
as
soon
as
I
had
completed
that
entire
course
of
study
at
the
end
of
which
one
was
usually
accepted
into
the
rank
of

scholars,
I
changed
my
opinion
completely.
For
I
found
myself
burdened
by
so
many
doubts
and
errors
that
it
seemed
to
me
I
had
gained
nothing
by
trying
to
instruct
myself,
other
than
the
fact
that
I
had
increasingly
discovered
my
own
ignorance.
Yet
I
had
been
in
one
of
the
most
famous
schools
in

Europe,
a
place
where
I
thought
there
must
be
erudite
men,
if
there
were
such
people
anywhere
on
earth.
I
had
learned
everything
which
the
others
learned
there,
but
still,
not
being
happy
with
the
sciences
which
we
were
being
taught,
I
had
gone
through
all
the
books
which
I
could
lay
my
hands
on

dealing with those sciences which are considered the most curious and rare. (2) In addition, I knew how other people were judging me, and I saw that they did not consider me inferior to my fellow students, although among them there were already some destined to fill the places of our teachers. And finally our age

seemed
to
me
as
flourishing
and
as
fertile
in
good
minds
as
any
preceding
age. Hence,
I
took
the
liberty
of
judging
all
the
others
by
myself
and
of
thinking
that
there
was
no
doctrine
in
the
world
of
the
kind
I
had
previously
been
led
to
hope
for.

However,
I
did
not
cease
valuing

the
exercises
which
kept
people
busy
in
the
schools.
I
knew
that
the
languages
one
learns
there
are
necessary
for
an
understanding
of
ancient
books,
that
the
gracefulness
of
fables
awakens
the
intellect,
that
the
memorable
actions
of
history
raise
the
mind,
and
if
one
reads
with
discretion,
help
to
form
one's
judgment,
that
reading

all
the
good
books
is
like
a
conversation
with
the
most
honourable
people
of
past
centuries,
who
were
their
authors,
even
a
carefully
prepared
dialogue
in
which
they
reveal
to
us
only
the
best
of
their
thoughts,
that
eloquence
has
incomparable
power
and
beauty,
that
poetry
has
a
most
ravishing
delicacy
and
softness,
that
mathematics

has
very
skillful
inventions
which
can
go
a
long
way
toward
satisfying
the
curious
as
well
as
facilitating
all
the
arts
and
lessening
the
work
of
men,
that
the
writings
which
deal
with
morals
contain
several
lessons
and
a
number
of
exhortations
to
virtue
which
are
extremely
useful,
that
theology
teaches
one
how
to
reach

heaven,
that
philosophy
provides
a
way
of
speaking
plausibly
on
all
matters
and
making
oneself
admired
by
those
who
are
less
scholarly,
that
jurisprudence,
medicine,
and
the
other
sciences
bring
honour
and
riches
to
those
who
cultivate
them,
and
finally
that
it
is
good
to
have
examined
all
of
them,
even
the
most
superstitious
and

false,
in
order
to
know
their
legitimate
value
and
to
guard
against
being
wrong.
But
I
believed
I
had
already
given
enough
time
to
languages
and
even
to
reading
ancient
books
as
well,
and
to
their
histories
and
stories.
For
talking
with
those
from
other
ages
is
almost
the
same
as
travelling.
It
is
good

to
know
something
about
the
customs
of
various
people,
so
that
we
can
judge
our
own
more
sensibly
and
do
not
think
everything
different
from
our
own
ways
ridiculous
and
irrational,
as
those
who
have
seen
nothing
are
accustomed
to
do.
But
when
one
spends
too
much
time
travelling,
one
finally
becomes
a
stranger
in

one's
own
country,
and
when
one
is
too
curious
about
things
which
went
on
in
past ages, one
usually
lives
in
considerable
ignorance
about
what
goes
on
in
this
one.
In
addition,
fables
make
us
imagine
several
totally
impossible
events
as
possible,
and
even
the
most
faithful
histories,
if
they
neither
change
nor
increase
the
importance
of

things
to
make
them
more
worth
reading,
at
the
very
least
almost
always
omit
the
most
menial
and
less
admirable
circumstances,
with
the
result
that
what
is
left
in
does
not
depict
the
truth.
Hence,
those
who
regulate
their
habits
by
the
examples
which
they
derive
from
these
histories
are
prone
to
fall
into
the

extravagances
of
the
knights
of
our
romances
and
to
dream
up
projects
which
exceed
their
powers.

I
placed
a
great
value
on
eloquence,
and
I
was
in
love
with
poetry,
but
I
thought
that
both
of
them
were
gifts
given
to
the
mind
rather
than
fruits
of
study.
Those
who
have
the
most
powerful

reasoning
and
who
direct
their
thoughts
best
in
order
to
make
them
clear
and
intelligible
can
always
convince
us
best
of
what
they
are
proposing,
even
if
they
speak
only
the
language
of
Lower
Brittany
and
have
never
learned
rhetoric.
And
those
who
possess
the
most
pleasant
creative
talents
and
who
know
how
to
express

them
with
the
most
adornment
and
smoothness
cannot
help
being
the
best
poets,
even
though
the
art
of
poetry
is
unknown
to
them.

I
found
mathematics
especially
delightful
because
of
the
certainty
and
clarity
of
its
reasoning.
But
I
did
not
yet
notice
its
true
use.
Thinking
that
it
was
practical
only
in
the

mechanical
arts,
I
was
astonished
that
on
its
foundations,
so
strong
and
solid,
nothing
more
imposing
had
been
built
up.
By
contrast,
I
compared
the
writings
of
the
ancient
pagans
which
deal
with
morality
to
really
superb
and
magnificent
palaces
built
on
nothing
but
sand
and
mud.
They
raise
the
virtues
to
a
very
great

height
and
make
them
appear
valuable,
above
everything
in
the
world,
but
they
do
not
teach
us
to
know
them
well
enough,
and
often
what
they
call
by
such
a
beautiful
name
is
only
apathy
or
pride
or
despair
or
parricide.[3]

I
revered
our
theology
and
aspired
as
much
as
anyone
to
reach
heaven,

but
having
learned,
as
something
very
certain,
that
the
road
there
is
no
less
open
to
the
most
ignorant
as
to
the
most
learned
and
that
the
revealed
truths
which
lead
there
are
beyond
our
intelligence,
I
did
not
dare
to
submit
them
to
the
frailty
of
my
reasoning,
and
I
thought
that
undertaking
to

examine
them
successfully
would
require
me
to
have
some
extraordinary
heavenly
assistance
and
to
be
more
than
a
man.

I
will
say
nothing
of
philosophy
other
than
this:
once
I
saw
that
it
had
been
cultivated
for
several
centuries
by
the
most
excellent
minds
which
had
ever
lived,
and
that,
nonetheless,
there
was
still

nothing
in
it
which
was
not
disputed
and
which
was
thus
not
still
in
doubt,
I
did
not
have
sufficient
presumption
to
hope
to
fare
better
there
than
the
others.
Considering
how
many
different
opinions,
maintained
by
learned
people,
philosophy
could
have
about
the
same
matter,
without
there
ever
being
more
than
one
which
could

be
true,
I
reckoned
as
virtually
false
all
those
which
were
merely
probable.

Then,
as
for
the
other
sciences,
since
they
borrow
their
principles
from
philosophy,
I
judged
that
nothing
solid
could
have
been
built
on
such
insubstantial
foundations,
and
neither
the
honour
nor
the
profit
which
they
promise
were
sufficient
to
convince
me

to
learn
them,
for,
thank
God,
I
did
not
feel
myself
in
a
condition
which
obliged
me
to
make
a
profession
of
science
in
order
improve
my
fortune,
and,
although
I
did
not,
in
some
cynical
way,
undertake
to
proclaim
my
disdain
for
glory,
nonetheless
I
placed
very
little
value
on
the
fame
I
could

hope
to
acquire
only
through
false
titles.
And
finally,
as
for
bad
doctrines,
I
thought
I
already
understood
sufficiently
what
they
were
worth
in
order
not
be
taken
in
either
by
the
promises
of
an
alchemist,
by
the
predictions
of
an
astrologer,
by
the
impostures
of
a
magician,
or
by
the
artifice
or
the
bragging

of
any
of
those
who
made
a
profession
of
knowing
more
than
they
know.

That
is
why,
as
soon
as
my
age
permitted
me
to
leave
the
supervision
of
my
professors,
I
completely
stopped
the
study
of
letters,
and,
resolving
not
to
look
any
more
in
any
other
science
except
one
which
could
be

found
inside
myself
or
in
the
great
book
of
the
world,
I
spent
the
rest
of
my
youth
travelling,
looking
into
courts
and
armies,
associating
with
people
of
various
humours
and
conditions,
collecting
various
experiences,
testing
myself
in
the
encounters
which
fortune
offered
me,
and
everywhere
reflecting
on
the
things
I
came
across
in
such

a
way
that
I
could
draw
some
profit
from
them.
For
it
seemed
to
me
that
I
could
arrive
at
considerably
more
truth
in
the
reasoning
that
each
man
makes
concerning
the
matters
which
are
important
to
him
and
in
which
events
could
punish
him
soon
afterwards
if
he
judged
badly,
than
in
the
reasoning

made
by
a
man
of
letters
in
his
study
concerning
speculations
which
produce
no
effect
and
which
are
of
no
consequence
to
him,
except
perhaps
that
from
them
he
can
augment
his
vanity
—
and
all
the
more
so,
the
further
his
speculations
are
from
common
sense,
because
he
would
have
had
to
use
that

much
more
wit
and
artifice
in
the
attempt
to
make
them
probable.
And
I
always
had
an
extreme
desire
to
learn
to
distinguish
the
true
from
the
false,
in
order
to
see
clearly
in
my
actions
and
to
proceed
with
confidence
in
this
life.

It
is
true
that
while
I
did
nothing
but
examine

the
customs
of
other
men,
I
found
hardly
anything
there
to
reassure
me,
and
I
noticed
as
much
diversity
among
men
as
I
had
earlier
among
the
opinions
of
philosophers.
Consequently,
the
greatest
profit
which
I
derived
from
this
was
that,
by
seeing
several
things
which,
although
they
seem
really
extravagant
and
ridiculous
to
us,

were commonly accepted and approved by other great people, I learned not to believe too firmly in anything which I had been persuaded to believe merely by example and by custom. Thus, I gradually freed myself of plenty of errors which can obfuscate our natural light and make us less capable of listening to reason.

But
after
I
had
spent
a
few
years
studying
in
this
way
in
the
book
of
the
world,
attempting
to
acquire
some
experience,
one
day
I
resolved
to
study
myself
as
well
and
to
use
all
the
powers
of
my
mind
to
select
paths
which
I
should
follow,
a
task
which
brought
me
considerably
more

success, it seems to me, than if I had never gone away from my own country and my books.

## PART TWO

I was then in Germany, summoned by the wars which have not yet concluded there. (4) As I was returning to the army from the coronation of the emperor, the onset of

winter
stopped
me
in
a
place
where,
not
finding
any
conversation
to
divert
me
and
in
addition,
by
good
fortune,
not
having
any
cares
or
passions
to
trouble
me,
I
spent
the
entire
day
closed
up
alone
in
a
room
heated
by
a
stove,
where
I
had
complete
leisure
to
talk
to
myself
about
my

thoughts.
Among
these,
one
of
the
first
was
that
I
noticed
myself
thinking
about
how
often
there
is
not
so
much
perfection
in
works
created
from
several
pieces
and
made
by
the
hands
of
various
masters
as
there
is
in
those
which
one
person
has
worked
on
alone.
Thus,
we
see
that
the
buildings
which

a
single
architect
has
undertaken
and
completed
are
usually
more
beautiful
and
better
ordered
than
those
which
several
people
have
tried
to
refurbish
by
making
use
of
old
walls
built
for
other
purposes.
That
is
why
those
ancient
cities
which
were
only
small
villages
at
the
start
and
became
large
towns
over
time
are
ordinarily

so
badly
laid
out,
compared
to
the
regular
places
which
an
engineer
has
designed
freely
on
level
ground.
Even
though,
considering
the
buildings
in
each
of
them
separately,
we
often
find
as
much
beauty
in
the
former
town
as
in
the
latter,
or
more,
nonetheless,
looking
at
them
as
they
are
arranged
—
here
a

large
one,
there
a
small
one
—
and
the
way
they
make
the
streets
crooked
and
unequal,
we
would
say
that
chance
rather
than
the
will
of
some
men
using
their
reason
designed
them
this
way.
And
if
one
considers
that
nonetheless
there
have
always
been
certain
officials
charged
with
seeing
that
private
buildings
serve

as a public ornament, one will readily see that it is difficult to achieve really fine things by working only with other people's pieces. Thus, I imagined to myself that people who were semi-savages in earlier times and who became civilized only little by little and created their laws only as they were compelled

to
by
the
extent
to
which
crimes
and
quarrels
bothered
them
would
not
be
so
well
regulated
as
those
who,
from
the
moment
they
first
assembled,
followed
the
constitution
of
some
prudent
legislator.
It
is
indeed
certain
that
the
state
of
the
true
religion,
whose
laws
God
alone
created,
must
be
incomparably
better
ordered
than

all
the
others.
And,
to
speak
of
human
affairs,
I
believe
that
if
Sparta
was
in
earlier
times
very
prosperous,
that
was
not
on
account
of
the
goodness
of
each
of
its
laws
in
particular,
seeing
that
several
were
very
strange
and
even
contrary
to
good
morals,
but
on
account
of
the
fact
that
they

were
devised
by
only
a
single
man
and
thus
they
contributed
towards
the
same
end.
Similarly
I
thought
that
the
sciences
contained
in
books,
at
least
those
whose
reasons
are
only
probable
and
without
any
proofs,
since
they
were
put
together
and
crudely
fashioned
little
by
little
out
of
the
opinions
of
several
different
people,

therefore
did
not
approach
the
truth
as
much
as
the
simple
reasoning
which
a
man
of
good
sense
can
make
quite
naturally
concerning
matters
of
his
own
experience.
In
the
same
way
I
thought
that
because
we
were
all
children
before
we
were
men
and
because
it
was
necessary
for
us
to
be
governed
for

a
long
time
by
our
appetites
and
our
supervisors,
who
were
often
at
odds
with
each
other,
with
neither
of
them
perhaps
advising
us
always
for
the
best,
it
is
almost
impossible
that
our
judgments
are
as
pure
and
solid
as
they
would
have
been
if
we
had
had
the
total
use
of
our
reason

from
the
moment
of
our
birth
and
had
never
been
led
by
anything
but
our
reason.

It
is
true
that
we
see
little
point
in
demolishing
all
the
houses
of
a
city
for
the
sole
purpose
of
rebuilding
them
in
another
way
and
thus
making
the
streets
more
beautiful.
But
we
do
see
several

people
demolish
their
houses
in
order
to
rebuild
them,
and,
indeed,
sometimes
they
are
compelled
to
do
so,
when
the
houses
are
in
danger
of
collapsing
on
their
own
and
when
their
foundations
are
not
steady.
This
example
persuaded
me
that
there
would
probably
be
little
point
for
a
particular
man
to
draw
up
a

design
for
reforming
a
state,
changing
all
of
it
from
the
foundations,
overturning
it
in
order
to
put
it
up
again,
or
even
for
reforming
the
body
of
sciences
or
the
order
established
in
the
schools
for
teaching
the
sciences.
But
so
far
as
all
the
opinions
which
I
had
received
up
to
that
point

and
which
I
believed
credible
were
concerned,
I
convinced
myself
that
the
best
possible
thing
for
me
to
do
was
to
undertake
to
remove
them
once
and
for
all,
so
that
afterwards
I
could
replace
them
either
by
other
better
ones
or
perhaps
by
the
same
ones,
once
I
had
adjusted
them
to
a
reasonable

standard.
And
I
firmly
believed
that
by
this
means
I
would
be
successful
in
conducting
my
life
much
better
than
if
I
built
only
on
the
old
foundations
and
relied
only
on
principles
which
I
had
been
persuaded
to
accept
in
my
youth,
without
ever
having
examined
whether
they
were
true.
For,
although
I
recognized

various problems with this approach, these were not without remedy and could not compare to those which occur in the reform of the least matters concerning the public. It is too difficult to re-erect those large bodies if they are thrown down or even to keep them once they are weakened, and their collapses

cannot
be
anything
but
very
drastic.
Then,
as
far
as
the
imperfections
of
large
public
bodies
are
concerned,
if
they
have
any
(and
the
variety
among
such
bodies
alone
is
sufficient
to
assure
us
that
there
are
several
imperfections),
habit
has
no
doubt
considerably
softened
these
and
has
even
managed
to
avoid
some
problems
or

corrected
a
number
of
them
insensibly,
which
people's
caution
could
not
have
managed
so
well,
and
finally
the
imperfections
are
almost
always
easier
to
bear
than
changing
them
would
be,
in
the
same
way
that
the
major
roads
which
wind
among
the
mountains
gradually
become
so
smooth
and
convenient
from
being
used,
that
it
is

much
better
to
follow
them
than
to
set
out
to
go
more
directly
by
climbing
up
over
the
rocks
and
going
down
right
to
the
bottom
of
the
precipices.

That
is
why
I
cannot
approve
at
all
of
those
muddled
and
worried
temperaments
who,
without
being
summoned
by
their
birth
or
fortune
to
the

management
of
public
business,
never
stop
proposing
some
idea
for
a
new
reform
in
it.
If
I
thought
that
there
was
the
slightest
thing
in
this
text
which
would
enable
someone
to
suspect
me
of
this
foolishness,
I
would
be
very
reluctant
to
allow
it
to
be
published.
My
intention
has
never
been
to
do

more
than
try
to
reform
my
own
thoughts
and
to
build
on
a
foundation
which
is
entirely
my
own.
And
if
my
work
has
pleased
me
sufficiently
to
make
me
show
you
the
model
of
it
here,
that
is
not
because
I
wish
to
advise
anyone
to
imitate
it.
Those
to
whom
God
has
given

more
of
his
grace
will
perhaps
have
loftier
intentions,
but
I
fear
that
this
work
may
already
be
too
bold
for
several
people.
The
single
resolution
to
strip
away
all
the
opinions
which
one
has
previously
absorbed
into
one's
beliefs
is
not
an
example
which
everyone
should
follow.
Most
of
the
world
is
made
up

of two sorts of minds for whom such a resolution is not suitable. First, there are those who, believing themselves more clever than they are, cannot stop making hasty judgments, without having enough patience to conduct their thoughts in an orderly way, with the result that, once they have taken the liberty of doubting the

principles they have received and of leaving the common road, they will never be able to hold to the track which they need to take in order to proceed more directly and will remain lost all their lives. Then, there are the ones who, having sufficient reason or modesty to judge that they are less

capable
of
differentiating
truth
and
falsehood
than
several
others
from
whom
they
can
be
instructed,
must
content
themselves
with
following
the
opinions
of
these
others
rather
than
searching
for
better
opinions
on
their
own.

As
for
me,
I
would
have
undoubtedly
been
among
the
number
of
this
latter
group
if
I
had
only
had

a
single
master
or
if
I
had
known
nothing
at
all
about
the
differences
which
have
always
existed
among
the
opinions
of
the
most
highly
educated
men.
But
I
learned
from
my
college
days
on
that
one
cannot
imagine
anything
so
strange
and
so
incredible
that
it
has
not
been
said
by
some
philosopher
and,

later,
in
my
travelling,
I
found
out
that
all
those
who
have
views
very
different
from
our
own
are
not
therefore
barbarians
or
savages,
but
that
several
use
as
much
reason
as
we
do,
or
more.
I
also
considered
how
much
the
same
man,
with
the
same
mind,
raised
from
his
infancy
on
among
the

French
or
the
Germans,
would
become
different
from
what
he
would
have
been
if
he
had
always
lived
among
the
Chinese
or
the
cannibals,
and
how,
even
in
our
style
of
dress
the
same
thing
which
pleased
us
ten
years
ago
and
which
will
perhaps
please
us
again
ten
years
from
today,
now
seems
to

us
extravagant
and
ridiculous.
This
being
the
case,
we
are
clearly
persuaded
more
by
custom
and
example
than
by
any
certain
knowledge.
Nonetheless,
a
plurality
of
voices
is
not
a
proof
worth
anything
for
truths
which
are
a
little
difficult
to
discover,
because
it
is
far
more
probable
that
one
man
by
himself
would
have

found
them
than
an
entire
people.
Since
I
could
not
select
anyone
whose
opinions
it
seemed
to
me
one
should
prefer
to
those
of
other
people,
I
found
myself,
so
to
speak,
compelled
to
guide
myself
on
my
own.

But
like
a
man
who
proceeds
alone
and
in
the
shadows,
I
resolved
to
go

so
slowly
and
to
use
so
much
circumspection
in
all matters,
that if
I
only
advanced
a
very
short
distance,
at
least
I
would
take
good
care
not
to
fall.
I
did
not
even
wish
to
begin
by
rejecting
completely
any
of
the
opinions
which
could
have
slipped
into
my
beliefs
previously
without
being
introduced
by
reason,

before
I
had
taken
up
enough
time
drawing
up
a
plan
for
the
work
I
was
undertaking
and
seeking
out
the
true
method
for
arriving
at
an
understanding
of
everything
my
mind
was
capable
of
knowing.

When
I
was
younger,
among
the
branches
of
philosophy,
I
had
studied
a
little
logic
and,
among
the

subjects
of
mathematics,
geometrical
analysis
and
algebra,
three
arts
or
sciences
which
looked
as
if
they
ought
to
contribute
something
to
my
project.
But
in
looking
at
them,
I
took
care,
because,
so
far
as
logic
is
concerned,
its
syllogisms
and
most
of
its
other
instructions
serve
to
explain
to
others
what
one
already
knows

or
even,
as
in
the
art
of
Lully,
to
speak
without
judgment
of
things
about
which
one
is
ignorant,
rather
than
to
learn
what
they
are.
(5) Although
philosophy
does,
in
fact,
contain
many
really
true
and
excellent
precepts,
mixed
in
with
them
there
are
always
so
many
injurious
or
superfluous
ones
that
it
is
almost

as
difficult
to
separate
them
as
to
draw
a
Diana
or
a
Minerva
out
of
a
block
of
marble
which
has
not
yet
been
carved.
Then,
so
far
as
the
analysis
of
the
ancients
and
the
algebra
of
the
moderns
are
concerned,
other
than
the
fact
that
they
deal
only
with
really
abstract
matters,
which

have
no
apparent
use,
the
former
is
always
so
concentrated
on
considering
numbers
that
it
cannot
exercise
the
understanding
without
considerably
tiring
the
imagination,
and
in
the
latter
is
so
subject
to
certain
rules
and
symbols
that
it
has
been
turned
into
a
confused
and
obscure
art
which
clutters
up
the
mind
rather
than
a

science
which
cultivates
it.
Those
were
the
reasons
why
I
thought
I
had
to
look
for
some
other
method
which
included
the
advantages
of
these
three
subjects
but
was
free
of
their
defects.
And
since
a
multitude
of
laws
often
provides
excuses
for
vices,
so
that
a
state
is
much
better
ruled
when
it
has

only
a
very
few
laws
which
are
very
strictly
observed,
I
thought
that,
instead
of
that
large
number
of
rules
which
make
up
logic,
I
would
have
enough
with
the
four
following
rules,
provided
that
I
maintained
a
strong
and
constant
resolution
that
I
would
never
fail
to
observe
them,
not
even
once.

The

first
rule
was
that
I
would
not
accept
anything
as
true
which
I
did
not
clearly
know
to
be
true.
That
is
to
say,
I
would
carefully
avoid
being
over
hasty
or
prejudiced,
and
I
would
understand
nothing
by
my
judgments
beyond
what
presented
itself
so
clearly
and
distinctly
to
my
mind
that
I
had

no occasion to doubt it. (6)

The second was to divide each difficulty which I examined into as many parts as possible and as might be necessary to resolve it better.

The third was to conduct my thoughts in an orderly way, beginning with the simplest objects, the ones easiest to know, so

that
little
by
little
I
could
gradually
climb
right
up
to
the
knowledge
of
the
most
complex,
by
assuming
the
same
order,
even
among
those
things
which
do
not
naturally
come
one
after
the
other.

And
the
last
was
to
make
my
calculations
throughout
so
complete
and
my
review
so
general
that
I
would

be
confident
of
not
omitting
anything.

Those
long
chains
of
reasons,
all
simple
and
easy,
which
geometers
have
habitually
used
to
reach
their
most
difficult
proofs
gave
me
occasion
to
imagine
to
myself
that
everything
which
could
fall
under
human
knowledge
would
follow
in
the
same
way
and
that,
provided
only
that
one
refused

to
accept
anything
as
true
which
was
not
and
that
one
always
kept
to
the
order
necessary
to
deduce
one
thing
from
another,
there
could
not
be
anything
so
far
distant
that
one
could
not
finally
reach
it,
nor
so
hidden
that
one
could
not
discover
it.
And
I
did
not
have
much
trouble
finding

out
the
issues
which
I
had
to
deal
with
first.
For
I
already
knew
that
it
had
to
be
with
the
simplest
things,
the
ones
easiest
to
know.
When
I
thought
about
how,
among
all
those
who
had
so
far
searched
for
truth
in
the
sciences,
it
was
only
the
mathematicians
who
had
been
able

to
find
some
proofs,
that
is
to
say,
some
certain
and
evident
reasons,
I
had
no
doubt
at
all
that
I
should
start
with
the
same
things
which
they
had
examined,
although
I
did
not
hope
for
any
practical
results,
other
than
that
they
would
accustom
my
mind
to
revelling
in
the
truth
and
not

remaining
happy
with
false
reasons.
But
for
all
that
I
did
not
plan
trying
to
learn
all
the
particular
sciences
which
people
commonly
call
mathematical.
Since
I
saw
that,
even
though
their
objects
were
different,
they
were
alike
in
that
they
all
agreed
they
should
consider
nothing
except
the
various
relationships
or
proportions
among
the

objects
of
study
found
there,
I
thought
that
it
would
be
more
valuable
if
I
examined
only
these
proportions
in
general,
without
assuming
that
they
were
present
in
the
objects,
except
for
those
which
would
help
to
provide
me
knowledge
of
them
most
readily,
but
without
in
this
way
restricting
them
at
all
to
those

objects,
so
that
they
could
be
all
the
better
applied
later
to
every
other
object
for
which
they
might
be
suitable.
Then,
because
I
observed
that,
in
order
to
understand
these
things,
I
would
sometimes
need
to
consider
each
one
in
particular
and
sometimes
only
to
remember
them
or
to
understand
several
of
them
together,

I
thought
that
to
consider
them
better
separately,
I
ought
to
assume
that
they
were
like
lines,
because
I
know
of
nothing
simpler,
nothing
which
I
could
more
distinctly
represent
to
my
imagination
and
my
senses.
But
in
order
to
remember
them
or
to
understand
several
of
them
together,
I
had
to
explain
them
by

some formulas as short as possible and, by this means, I would borrow all the best elements of analytic geometry and algebra and would correct all the defects of one by the other. (7)

As a matter of fact, I venture to say that the precise observation of these few precepts which I had

selected
gave
me
such
a
facility
at
disentangling
all
the
questions
which
these
two
sciences
cover,
that
in
the
two
or
three
months
that
I
used
them
to
examine
these
questions,
starting
with
the
simplest
and
the
most
general
and
letting
each
truth
I
found
serve
as
a
rule
which
I
could
use
afterwards
to

find
others,
not
only
did
I
resolve
several
problems
which
I
had
previously
judged
very
difficult,
but
it
also
seemed
to
me
towards
the
end
that
I
could
determine,
even
with
those
questions
where
I
was
ignorant,
the
way
to
resolve
them
and
the
extent
to
which
such
resolution
was
possible.
In
saying
this,
perhaps

I
will
not
appear
too
vain
if
you
consider
that,
since
there
is
only
one
truth
for
each
thing,
whoever
finds
it
knows
as
much
as
one
can
know
about
it
and
that,
for
example,
a
child
instructed
in
arithmetic,
having
made
an
addition
following
the
rules,
can
be
confident
of
having
found,
so
far

as
the
sum
he
is
examining
is
concerned,
everything
that
the
human
mind
can
find
out.
For
the
method
which
teaches
one
to
follow
the
true
order
and
to
count
exactly
all
the
relevant
details
in
what
one
is
looking
for
contains
everything
which
gives
certainty
to
the
rules
of
arithmetic.

But
what
pleased

me
the
most
with
this
method
was
that
with
it
I
was
confident
of
using
all
my
reason,
if
not
perfectly,
at
least
as
well
as
was
in
my
power.
In
addition,
I
felt,
as
I
applied
it,
that
my
mind
was
accustoming
itself
gradually
to
think
more
clearly
and
distinctly
about
its
objects,
and

because
I
had
not
restricted
this
method
to
one
matter
in
particular,
I
was
hopeful
that
I
could
apply
it
just
as
usefully
to
difficulties
in
the
other
sciences
as
I
had
applied
it
to
those
in
algebra.
But
for
all
that,
I
did
not
venture
to
try
immediately
examining
all
those
scientific
problems
which

presented themselves. For that would have been contrary to the order which my method prescribed. But I noticed that the principles of science all had to be borrowed from philosophy, a subject in which I no longer found anything certain. So I thought that, before anything else, I should attempt to establish such principles there and that,

since
this
was
the
most
important
matter
in
the
world,
where
one
had
to
be
most
fearful
of
overhasty
and
biased
judgments,
I
would
not
try
to
get
through
it
until
I
had
reached
an
age
considerably
more
mature
than
I
was
then
at
twenty-
three
and
until
I
had
used
a
lot
more
time

preparing
myself,
weeding
out
of
my
mind
all
the
bad
opinions
which
I
had
accepted
before
that
time,
as
well
as
collecting
several
experiences
so
that
later
they
could
be
the
subject
matter
of
my
reasoning,
always
practising
the
method
which
I
had
set
for
myself
in
order
to
keep
on
improving
myself
in
these

matters.

# PART THREE

Finally,
before
one
starts
to
rebuild
the
lodgings
where
one
lives,
it
is
not
sufficient
to
knock
them
down
and
provide
for
materials
and
architects
or
to
work
on
the
architecture
oneself,
having,
in
addition
to
that,
carefully
drawn
up
a
design.
One
must
also
provide
oneself
with

some
other
place
where
one
can
lodge
comfortably
during
the
time
one
works
on
the
building.
Thus,
in
order
not
to
be
irresolute
in
my
actions
while
my
reason
obliged
me
to
be
so
in
my
judgments
and
in
order
not
to
prevent
myself
living
from
then
on
as
happily
as
I
could,
I
drew

up
for
myself
a
provisional
morality,
consisting
of
only
three
or
four
maxims,
which
I
wish
to
share
with
you.

The
first
was
to
obey
the
laws
and
the
customs
of
my
country,
constantly
holding
to
the
religion
which
God
gave
me
the
grace
to
be
instructed
in
since
my
childhood
and
governing
myself

in
all
other
things
in
accordance
with
the
most
moderate
opinions,
the
ones
furthest
removed
from
excess,
which
were
commonly
accepted
and
practised
by
the
most
sensible
of
those
people
among
whom
I
would
be
living.
Since,
from
that
point
on,
I
began
to
estimate
my
own
views
as
worthless,
because
I
wished
to
subject

them
all
to
examination,
I
was
confident
that
I
could
not
do
better
than
to
follow
those
of
the
most
sensible
people.
And
even
though
there
might
perhaps
be
people
just
as
sensible
among
the
Persians
or
the
Chinese
as
among
us,
it
seemed
to
me
that
the
most
practical
thing
would
be
for
me

to
guide
myself
by
those
among
whom
I
had
to
live
and
that,
in
order
to
understand
their
real
opinions,
it
would
be
better
for
me
to
pay
attention
to
what
they
practised
rather
than
to
what
they
said,
not
only
because,
given
the
corruption
of
our
morals,
there
are
few
people
who
are
willing

to
state
everything
they
believe,
but
also
because
several
are
themselves
ignorant
of
what
they
believe.
For
the
act
of
thinking
by
which
one
believes
in
something
is
different
from
the
act
of
thinking
by
which
one
understands
that
one
believes
it,
and
one
of
these
separate
acts
frequently
appears
without
the
other.
Moreover,
among

several
opinions
equally
well
received,
I
chose
only
the
most
moderate
ones,
as
much
because
such
opinions
are
always
the
most
convenient
to
practice
and
probably
the
best,
for
all
excess
is
usually
bad,
as
because
they
would
also
not
take
me
as
far
from
the
true
road,
if
I
made
a
mistake,
as
if

I
had
chosen
one
of
the
extremes
when
it
was
the
other
one
which
I
should
have
followed.
And
I
especially
included
among
what
was
excessive
all
promises
by
which
one
reduces
one's
liberty.
Not
that
I
disapprove
of
laws
which,
in
an
attempt
to
remedy
the
fickleness
of
feeble
minds,
permit
people
with
a

good
plan
or
even
an
indifferent
arrangement
for
security
in
business
to
make
vows
or
contracts
obliging
them
to
maintain
their
provisions.
But
because
I
did
not
see
anything
in
the
world
which
remained
always
in
the
same
condition
and,
in
my
particular
case,
because
I
promised
myself
that
I
would
increasingly
perfect
my
judgments

and
not
make
them
worse,
I
would
have
thought
I
was
committing
a
great
error
in
good
sense
if,
because
I
then
approved
of
something,
I
obliged
myself
to
continue
to
take
it
as
something
good
later
on,
when
it
had
perhaps
ceased
to
be
so
or
when
I
had
ceased
to
value
it
as

something
good.

My
second
maxim
was
to
be
as
constant
and
as
resolute
in
my
actions
as
I
could,
and
to
follow
the
most
doubtful
opinions,
once
I
had
settled
on
them
for
myself,
with
no
less
constancy
than
if
they
had
been
very
sure,
imitating
in
this
matter
travelers
who,
finding
themselves
lost

in
some
forest,
should
not
wander
around,
shifting
direction
this
way
and
that;
even
less
should
they
stop
in
one
place;
they
should
move
on
always
as
straight
as
they
can
in
the
same
direction
and
not
change
it
for
inadequate
reasons,
even
though
at
the
beginning
it
was
perhaps
only
chance
which
led
to

their
choice
of
direction.
For
in
this
way,
if
they
do
not
come
out
exactly
where
they
want
to,
they
will
at
least
end
up
arriving
somewhere
where
they
will
probably
be
better
off
than
in
the
middle
of
a
forest.
And
because
the
actions
of
life
often
brook
no
delay,
it
is
certainly
very

true
that,
when
it
is
not
in
our
power
to
determine
the
truest
opinions,
we
ought
to
follow
the
most
probable
ones,
and
even
when
we
see
no
difference
in
probability
among
this
group
of
truths
or
that
one,
nevertheless,
we
have
to
decide
on
some
for
ourselves
and
then
to
consider
them,
not
as

something
doubtful
with
regard
to
the
practical
matter
at
hand,
but
as
manifestly
true
and
very
certain,
because
the
reason
which
made
us
choose
them
has
these
qualities.
This
method
was
able
from
then
on
to
relieve
me
of
all
the
regrets
and
remorse
which
usually
upset
the
consciences
of
those
weak
and
wavering
minds

which
permit
themselves
to
work
inconsistently
with
things
which
they
accept
as
good
but
which
they
later
judge
to
be
bad.

My
third
maxim
was
to
try
always
to
overcome
myself
rather
than
fortune
and
to
change
my
desires
rather
than
the
order
of
the
world,
and
generally
to
get
in
the
habit
of

believing
that
there
is
nothing
which
is
entirely
within
our
power
except
our
thoughts,
so
that
after
we
have
done
our
best
concerning
those
things
which
lie
outside
of
us,
everything
which
our
attempt
fails
to
deal
with
is,
so
far
as
we
are
concerned,
absolutely
impossible.
That
alone
seemed
to
me
to
be
sufficient

to
prevent
me
from
desiring
anything
in
future
which
I
might
not
achieve
and
thus
to
make
me
happy.
For
since
our
will
has
a
natural
tendency
to
desire
only
things
which
our
understanding
represents
as
in
some
way
possible,
it
is
certain
that
if
we
think
about
all
the
good
things
which
are
outside

of
us
as
equally
distant
from
our
power,
we
would
no
more
regret
missing
those
whose
loss
appears
due
to
our
birth,
when
we
are
deprived
by
no
fault
of
our
own,
than
we
would
regret
not
possessing
the
kingdoms
of
China
or
Mexico.
By
making,
as
the
saying
goes,
a
virtue
of
necessity,
we

would
not
desire
health
when
we
are
sick
or
freedom
when
we
are
in
prison,
any
more
than
we
now
desire
to
have
either
a
body
made
of
some
material
as
incorruptible
as
diamonds
or
wings
to
fly,
like
the
birds.
But
I
admit
that
there
is
a
need
for
a
long
discipline
and
frequently

repeated
meditation
in
order
to
accustom oneself to
looking
at
everything
from
this
point
of
view.
And
I
believe
that
this
is
the
principal
secret
of
those
philosophers
who
have
been
able
in
earlier
times
to
escape
from
the
demands
of
empire
and
fortune
and
who,
despite
pains
and
poverty,
could
rival
their
gods
in
happiness.
For,

constantly
busy
thinking
about
the
limits
prescribed
for
them
by
nature,
they
persuaded
themselves
so
perfectly
that
nothing
was
in
their
power
except
their
thoughts,
that
that
alone
would
be
enough
to
prevent
them
from
having
any
affection
for
other
things,
and
they
acquired
such
an
absolute
control
over
their
thoughts
that
they
found
in

that
process
reason
to
think
themselves
more
rich
and
more
powerful
and
more
free
and
more
content
than
any
other
men,
who,
because
they
did
not
possess
this
philosophy,
never
had
the
same
control
over
everything
they
desired,
no
matter
how
favoured
they
might
be
by
nature
and
fortune.

Finally,
to
conclude
these
moral

precepts,
I
advised
myself
to
draw
up
a
review
of
the
various
occupations
which
men
have
in
this
life,
in
an
attempt
to
make
a
choice
about
the
best
and,
without
wanting
to
say
anything
about
the
others,
I
thought
that
I
could
not
do
better
than
to
continue
in
the
very
occupation
I
was

engaged
in,
that
is,
using
all
my
life
to
cultivate
my
reason
and
to
progress
as
far
as
I
could
in
a
knowledge
of
the
truth,
following
the
method
which
I
had
prescribed
for
myself.
I
experienced
such
extreme
contentment
once
I
started
using
this
method
that
I
did
not
think
that
one
could
find

anything
more
sweet
and
innocent
in
this
life.
Since
every
day
I
discovered
through
this
method
some
truths
which
seemed
to
me
sufficiently
important
and
commonly
unknown
to
other
men,
the
satisfaction
I
got
from
it
so
filled
my
mind
that
nothing
else
affected
me.
Moreover,
the
three
maxims
mentioned
above
were
founded
only
for

the
plan
I
had
to
continue
my
self-
instruction.
For
since
God
has
given
each
one
of
us
some
light
to
distinguish
truth
from
falsehood,
I
would
not
have
thought
I
could
remain
content
with
other
people's
opinions
for
one
moment,
if
I
had
not
set
out
to
use
my
own
judgment
to
examine
them

when
the
time
was
right,
and
I
would
not
have
known
how
to
free
myself
from
scruples
in
following
these
opinions,
if
I
had
not
hoped
that
I
would
not,
in
the
process,
lose
any
opportunity
to
find
better
ones,
in
cases
where
these
existed.
Finally
I
would
not
have
known
how
to
limit
my

desires nor how
to
rest
content,
if
I
had
not
followed
a
road
by
which
I
believed
I
could
be
confident
of
acquiring
all
the
knowledge
I
was
capable
of.
I
thought
by
the
same
means
I
could
acquire
all
the
true
benefits
I
was
capable
of
obtaining,
all
the
more
so
since
our
will
tends
to

follow
or
to
fly
away
from
only
those
things
which
our
understanding
has
represented
to
it
as
good
or
bad.
So
in
order
to
act
well
it
is
sufficient
to
judge
well,
and
to
judge
as
well
as
one
can
is
sufficient
to
enable
one
to
do
one's
best,
that
is,
to
acquire
all
the

virtues, along with all the other benefits which one can get, and when one is certain that that is the case one could not fail to be content.

After assuring myself of these maxims in this manner and storing them away, along with the truths of the faith, which have always been first in

my
beliefs,
I
judged
that,
so
far
as
all
the
rest
of
my
opinions
were
concerned,
I
could
freely
set
about
dispensing
with
them.
Since
I
hoped
to
be
able
to
arrive
at
my
goal
more
easily
by
talking
with
men
rather
than
staying
any
longer
closed
up
in
the
room
with
the
stove
where

I
had
had
all
these
thoughts,
before
that
winter
was
over
and
done
with,
I
set
about
my
travels
again.
And
in
all
the
nine
years
following
I
did
nothing
else
but
roll
around
here
and
there
in
the
world,
trying
to
be
a
spectator
rather
than
an
actor
in
all
the
comedies
playing
themselves

out
there.
By
reflecting
on
each
matter,
in
particular
on
what
there
was
which
could
render
it
suspect
and
give
us
an
opportunity
to
make mistakes, I
rooted
out
from
my
mind
all
the
errors
which
could
have
slid
into
it
in
the
previous
years.
Not
that
in
the
process
I
copied
the
skeptics,
who
doubt
only

for
the
sake
of
doubting,
and
pretend
that
they
are
always
irresolute. For
my
entire
plan,
by
contrast,
tended
only
to
make
me
confident
about
throwing
away
the
shifting
ground
and
the
sand,
in
order
to
find
the
rock
or
the
sedimentary
clay. This
gave
me
considerable
success,
it
seems
to
me,
inasmuch
as
in
my
attempts

to
discover
the
falsity
or
the
uncertainty
of
the
propositions
I
examined,
not
by
weak
conjectures,
but
by
clear
and
confident
reasoning,
I
came
across
nothing
so
doubtful
that
I
did
not
always
draw
some
fairly
certain
conclusion
from
it,
even
if
that
conclusion
was
that
it
contained
nothing
certain.
Just
as
when
we
tear

down
an
old
lodging,
we
usually
keep
the
scrap
to
use
in
building
a
new
structure,
so,
as
I
destroyed
all
those
opinions
of
mine
which
I
judged
poorly
grounded,
I
made
various
observations
and
acquired
several
experiences
which
were
of
use
to
me
later
in
establishing
more
certain
ones.
In
addition,
I
continued
to

practice
the
method
which
I
had
set
for
myself.
For
apart
from
the
fact
that
I
took
care,
in
general,
to
conduct
all
my
thinking
according
to
the
rules,
from
time
to
time
I
set
aside
a
few
hours
which
I
used
to
apply
the
method
to
mathematical
difficulties
in
particular,
or
even
to
some

other
difficulties
as
well,
ones
which
I
could
frame
in
a
manner
somewhat
similar
to
those
in
mathematics,
stripping
from
them
all
the
principles
of
the
other
sciences
which
I
did
not
find
sufficiently
strong,
as
you
will
see
I
have
done
in several
which
are
explained
in
this
volume.
**(8)** Thus,
without
living
in
a
way

apparently
different
from
those
who
have
nothing
else
to
do
but
spend
a
sweet
and
innocent
life
studying
how
to
separate
pleasures
from
vices
and
enjoying
their
leisure
by
making
use
of
all
honourable
entertainments
without
getting
bored,
I
did
not
fail
to
follow
my
plans
and
to
benefit
from
the
knowledge
of
the
truth,

perhaps
more
so
than
if
I
had
only
read
books
or
associated
with
men
of
letters.

However,
these
nine
years
passed
by
before
I
had
yet
taken
any
stand
concerning
the
difficulties
which
are
usually
matters
of
dispute
among
the
scholars.
Nor
had
I
started
to
seek
the
foundations
of
any
philosophy
more
reliable

than
common
philosophy.
The
example
of
several
excellent
minds
who
had
earlier
had
the
same
idea
but
who,
it
seemed
to
me,
had
not
succeeded,
made
me
imagine
such
great
difficulties
that
I
would
perhaps
not
have
ventured
to
undertake
it
so
quickly,
if
I
had
not
seen
that
some
people
had
already
spread
the

rumour
that
I
had
concluded
my
work.
I
don't
know
what
to
say
about
the
basis
for
this
rumour.
And
if
I
contributed
something
to
it
by
my
conversations,
that
could
have
been
by
confessing
where
I
was
ignorant
more
ingenuously
than
those
who
have
studied
little
are
accustomed
to
do
and
perhaps
also
by

making
known
the
reasons
I
had
to
doubt
many
things
which
other
people
considered
certain,
rather
than
by
boasting
about
any
doctrine.
But
having
a
heart
sufficiently
good
not
to
wish
people
to
take
me
for
someone
other
than
the
man
I
am,
I
thought
it
necessary
to
attempt
by
every
means
to
make
myself

worthy
of
the
reputation
which
people
ascribed
to
me.
For
exactly
eight
years
this
desire
made
me
resolve
to
distance
myself
from
all
those
places
where
there
might
be
people
I
know
and
to
retire
here,
in
a
country
where
the
long
duration
of
the
war
has
established
such
order
that
the
armies
which
maintain

it
appear
to
serve
only
to
enable
the
people
to
enjoy
the
fruits
of
peace
with
even
more
security
and
where,
among
the
crowd
of
a
great
and
very
active
people,
who
are
more
careful
about
their
own
affairs
than
curious
about
those
of
other
people,
with
no
lack
of
any
commodities
present
in
the

most
frequently
visited
towns,
I
was
able
to
live
retired
in
solitude,
just
as
if
I
were
in
the
most
isolated
deserts.
(9)

# PART FOUR

I
don't
know
if
I
should
share
with
you
the
first
meditations
which
I
made
there,
for
they
are
so
metaphysical
and
so
out
of
the

ordinary
that
they
will
perhaps
not
be
to
everyone's
taste.
However,
in
order
that
people
may
be
able
to
judge
if
the
foundations
which
I
set
are
sufficiently
strong,
I
find
myself
in
some
way
compelled
to
speak
of
them.
For
a
long
time
previously
I
had
noticed
that
where
morals
are
concerned
it
is

necessary
sometimes
to
follow
opinions
which
one
knows
are
extremely
uncertain
as
if
they
are
indubitable,
as
mentioned
above.
But
since
at
that
time
I
wanted
only
to
carry
out
research
into
the
truth,
I
thought
I
must
do
the
opposite
and
reject
as
absolutely
false
everything
about
which
I
could
imagine
the
least
doubt,

in
order
to
see
if
there
would
be
anything
totally
indisputable
remaining
after
that
in
my
belief.
Thus,
because
our
senses
deceive
us
sometimes,
I
was
willing
to
assume
that
there
was
nothing
which
existed
the
way
our
senses
present
it
to
us.
And
because
there
are
men
who
make
mistakes
in
reasoning,
even
concerning

the
most
simple
matters
of
geometry,
and
who
create paralogisms,
and
because
I
judged
that
I
was
subject
to
error
just
as
much
as
anyone
else,
I
rejected
as
false
all
the
reasons
which
I
had
taken
earlier
as
proofs.
Finally,
considering
that
all
the
same
thoughts
which
we
have
when
awake
can
also
come
to

us
when
we
are
asleep,
without
there
being
truth
in
any
of
them
at
the
time,
I
determined
to
pretend
that
everything
which
had
ever
entered
my
mind
was
no
more
true
than
the
illusions
of
my
dreams.
But
immediately
afterwards
I
noticed
that,
while
I
wished
in
this
way
to
think
everything
was
false,

it
was
necessary
that
I
—
who
was
doing
the
thinking
—
had
to
be
something.
Noticing
that
this
truth
—
*I*
*think;*
*therefore,*
*I*
*am*
—
was
so
firm
and
so
sure
that
all
the
most
extravagant
assumptions
of
the
skeptics
would
not
be
able
to
weaken
it,
I
judged
that
I
could
accept

it
without
scruple
as
the
first
principle
of
the
philosophy
I
was
looking
for.[10]

Then
I
examined
with
attention
what
I
was,
and
I
saw
that
I
could
pretend
that
I
had
no
body
and
that
the
world
and
the
place
where
I
was
did
not
exist,
but
that,
in
spite
of
this,
I

could
not
pretend
that
I
did
not
exist.
By
contrast,
in
the
very
act
of
thinking
about
doubting
the
truth
of
other
things,
it
very
clearly
and
certainly
followed
that
I
existed;
whereas,
if
I
had
only
stopped
thinking,
even
though
all
the
other
things
which
I
had
ever
imagined
were
real,
I
would
have

no
reason
to
believe
that
I
existed.
From
that
I
recognized
that
I
was
a
substance
whose
essence
or
nature
is
only
thinking,
a
substance
which
has
no
need
of
any
location
and
does
not
depend
on
any
material
thing,
so
that
this
“I,”
that
is
to
say,
the
soul,
by
which
I
am
what

I
am,
is
entirely
distinct
from
the
body
and
is
even
easier
to
know
than
the
body,
and
that,
even
if
the
body
were
no
longer
there,
the
soul
could
not
help
being
everything
it
is.

After
that,
I
considered
in
general
what
is
necessary
for
a
proposition
to
be
true
and
certain,
for

since
I
had
just
found
one
idea
which
I
knew
to
be
true
and
certain,
I
thought
that
I
ought
also
to
understand
what
this
certitude
consisted
of.
And
having
noticed
that
in
the
sentence
"I
think;
therefore,
I
am"
there
is
nothing
at
all
to
assure
me
that
I
am
speaking
the
truth,
other

than
that
I
see
very
clearly
that
in
order
to
think
it
is
necessary
to
exist,
I
judged
that
I
could
take
as
a
general
rule
the
point
that
the
things
which
we
conceive
very
clearly
and
very
distinctly
are
all
true.
But
that
left
the
single
difficulty
of
properly
noticing
which
things
are
the

ones
we
conceive
distinctly.

After
that,
I
reflected
on
the
fact
that
I
had
doubts
and
that,
as
a
result,
my
being
was
not
completely
perfect,
for
I
saw
clearly
that
it
was
a
greater
perfection
to
know
than
to
doubt.
I
realized
that
I
should
seek
out
where
I
had
learned
to
think

of
something
more
perfect
than
I
was.
And
I
concluded
that
obviously
this
must
be
something
with
a
nature
which
was,
in
effect,
more
perfect.
As
for
the
thoughts
which
I
had
of
several
other
things
outside
of
me,
like
the
sky,
the
earth,
light,
heat,
and
a
thousand
others,
I
was
not
worried
about

knowing
where
they
came
from,
because
I
did
not
notice
anything
in
them
which
seemed
to
me
to
make
them
superior
to
myself.
Thus,
I
was
able
to
think
that,
if
they
were
true,
that
was
because
of
their
dependence
on
my
nature,
in
so
far
as
it
had
some
perfection
and,
if
they
were

not
true,
I
held
them
from
nothing,
that
is
to
say,
that
they
were
in
me
because
I
had
some
defect.
But
that
could
not
be
the
same
with
the
idea
of
a
being
more
perfect
than
mine. For
to
hold
that
idea
from
nothing
would
be
manifestly
impossible. And
because
it
is
no
less
unacceptable
that

something
more
perfect
should
be
a
consequence
of
and
dependent
on
something
less
perfect
than
that
something
should
come
from
nothing,
I
could
not
derive
this
idea
from
myself.
Thus,
I
concluded
that
the
idea
had
been
put
in
me
by
a
nature
which
was
truly
more
perfect
than
I
was,
even
one
which
contained

in
itself
all
the
perfections
about
which
I
could
have
some
idea,
that
is
to
say,
to
explain
myself
in
a
single
phrase,
a
nature
which
was
God.
To
this
I
added
the
fact
that,
since
I
know
about
some
perfections
which
I
do
not
have,
I
was
not
the
only
being
which
existed
(here

I
will
freely
use,
if
you
will
permit
me,
the
language
of
the
schools),
but
it
must
of
necessity
be
the
case
that
there
was
some
other
more
perfect
being,
on
whom
I
depended
and
from
whom
I
had
acquired
all
that
I
had.
For
if
I
had
been
alone
and
independent
of
everything
else,

so
that
I
derived
from
myself
all
perfection,
no
matter
how
small,
of
the
perfect
being,
I
would
have
been
able
to
have
from
myself,
for
the
same
reason,
all
the
additional
perfections
which
I
knew
I
lacked,
and
thus
be
myself
infinite,
eternal,
immutable,
all
knowing,
all
powerful,
and
finally
have
all
the
perfections

which
I
could
observe
as
present
in
God.
For,
following
the
reasoning
which
I
have
just
made,
to
know
the
nature
of
God,
to
the
extent
that
my
reasoning
is
able
to
do
that,
I
only
had
to
think
about
of
all
the
things
of
which
I
found
some
idea
within
me
and
consider
whether

it
was
a
sign
of
perfection
to
possess
them
or
not.
And
I
was
confident
that
none
of
those
ideas
which
indicated
some
imperfection
were
in
God,
but
that
all
the
others
were
there,
since
I
perceived
that
doubt,
inconstancy,
sadness,
and
similar
things
could
not
be
in
God,
in
view
of
the
fact
that

I
myself
would
have
been
very
pleased
to
be
free
of
them.
Then,
in
addition,
I
had
ideas
about
several
sensible
and
corporeal
things.
For
although
I
supposed
that
I
was
asleep
and
that
everything
which
I
saw
or
imagined
was
false,
nonetheless
I
could
not
deny
that
the
ideas
had
truly
been
in
my

thoughts.
But
because
I
had
already
recognized
in
myself
very
clearly
that
intelligent
nature
is
distinct
from
corporeal
nature,
when
I
considered
that
all
composite
natures
indicate
dependency
and
that
dependency
is
manifestly
a
defect,
I
judged
from
this
that
God's
perfection
could
not
consist
of
being
composed
of
these
two
natures,
and
that
thus

He
was
not,
but
that
if
there
were
some
bodies
in
the
world
or
even
some
intelligences
or
other
natures
which
were
not
completely
perfect,
their
being
had
to
depend
on
God's
power,
in
such
a
way
as
they
could
not
subsist
for
a
single
moment
without
Him.

After
that
I
wanted
to
look

for
other
truths,
and
I
proposed
to
myself
the
subject
matter
of
geometricians,
which
I
understood
as
a
continuous
body
or
a
space
extended
indefinitely
in
length,
width,
and
height
or
depth,
divisible
into
various
parts,
which
could
have
various
figures
and
sizes
and
be
moved
or
transposed
in
all
sorts
of
ways,
for
the

geometricians
assume
all
that
in
their
subject
matter.
I
glanced
through
some
of
their
simplest
proofs,
and
having
observed
that
this
grand
certainty
which
all
the
world
attributes
to
them
is
founded
only
on
the
fact
that
they
plan
these
proofs
clearly,
following
the
rule
which
I
have
so
often
stated,
I
notice
also
that

there
is
nothing
at
all
in
their
proofs
which
assures
me
of
the
existence
of
their
objects.
So,
for
example,
I
do
see
that,
if
we
assume
a
triangle,
it
must
be
the
case
that
its
three
angles
are
equal
to
two
right
angles,
but,
in
spite
of
that,
I
do
not
see
anything
which

assures
me
that
there
is
a
triangle
in
the
world.
But,
by
contrast,
once
I
returned
to
an
examination
of
the
idea
which
I
had
of
a
perfect
being,
I
found
that
that
being
contains
the
idea
of
existence
in
the
same
way
as
the
fact
the
three
angles
of
a
triangle
are
equal
to

two
right
angles
is
contained
in
the
idea
of
a
triangle,
or
that
in
a
sphere
all
the
parts
are
equidistant
from
the
centre,
or
it
is
even
more
evident,
and
that,
as
a
result,
it
is
as
just
as
certain
that
God,
this
perfect
being,
is
or
exists
as
any
geometric
proof
can
be.

But
the
reason
there
are
several
people
who
persuade
themselves
that
there
are
difficulties
in
understanding
this
and
even
knowing
what
their
soul
is,
as
well,
is
that
they
never
raise
their
minds
above
matters
of
sense
experience
and
that
they
are
so
accustomed
not
to
consider
anything
except
by
imagining
it,
which
is
a

way
of
thinking
in
particular
of
material
things,
so
that
everything
which
is
not
imaginable
seems
to
them
unintelligible.
This
point
is
obvious
enough
in
the
fact
that
even
the
philosophers
in
the
schools
maintain
the
axiom
that
there
is
nothing
in
the
understanding
which
has
not
first
of
all
been
in
the
senses.
But

it
is
certain
that
the
ideas
of
God
and
the
soul
have
never
been
present
in
sense
experience.
It
seemed
to
me
that
those
who
want
to
use
their
imagination
to
understand
these
things
are
acting
just
as
if
they
want
to
use
their
eyes
to
hear
sounds
or
smell
odours,
except
that
there
is

still
this
difference,
that
the
sense
of
sight
provides
us
no
less
assurance
of
the
truth
of
what
it
sees
than
do
the
sense
of
smell
or
hearing;
whereas,
neither
our
imagination
nor
our
senses
can
assure
us
of
anything
unless
our
understanding
intercedes.

Finally,
if
there
are
still
some
people
who
are
insufficiently

persuaded
of
the
existence
of
God
and
their
soul
by
the
reasons
I
have
provided,
I
would
like
them
to
know
that
everything
else
which
they
perhaps
are
more
confident
about
in
their
thinking,
like
having
a
body
and
knowing
that
there
are
stars
and
an
earth,
and
things
like
that,
are
less
certain
than

God's existence. For although one has a moral assurance about these things, something which makes doubting them appear at least extravagant, nonetheless, unless one is an unreasonable being, when a question of metaphysical certainty is involved, one cannot deny that there is insufficient material here to make one completely confident, for we notice that one

can
imagine
in
the
same
way
while
sleeping
that
one
has
another
body
and
that
one
sees
other
stars
and
another
earth,
without
such
things
existing.
For
what
is
the
source
of
our
knowledge
that
the
thoughts
which
come
while
dreaming
are
false,
rather
than
the
others,
seeing
that
often
they
are
no
less
lively

and
distinct?
And
if
the
best
minds
study
this
matter
as
much
as
they
please,
I
do
not
think
that
they
will
be
able
to
give
any
reason
which
will
be
sufficient
to
remove
this
doubt
unless
they
presuppose
the
existence
of
God.
First
of
all,
the
very
principle
which
I
have
so
often
taken

as
a
rule
—
only
to
recognize
as
true
all
those
things
which
we
conceive
very
clearly
and
very
distinctly
—
is
guaranteed
only
because
of
the
fact
that
God
is
or
exists,
that
He
is
a
perfect
being,
and
that
everything
which
is
in
us
comes
from
Him.
From
that
it
follows
that
our

ideas
or
notions,
being
real
things
which
come
from
God,
to
the
extent
that
they
are
clear
and
distinct,
in
that
respect
cannot
be
anything
but
true.
Consequently,
if
we
often
enough
have
some
ideas
or
notions
which
contain
something
false,
that
can
only
be
those
which
contain
some
confusion
and
obscurity,
because
in
this

they
participate
in
nothing,
that
is
to
say,
they
are
so
confused
in
us
only
because
we
are
not
completely
perfect.
And
it
is
evident
that
it
is
no
less
repugnant
that
falsity
or
imperfection,
in
itself,
should
come
from
God
than
that
truth
or
perfection
should
come
from
nothingness.
But
if
we
did
not

know
that
everything
real
and
true
within
us
comes
from
a
perfect
and
infinite
being,
then
no
matter
how
clear
and
distinct
our
ideas
were,
we
would
not
have
a
single
reason
to
assure
us
that
they
had
the
perfection
of
being
true.

Now,
after
the
knowledge
of
God
and
the
soul
in
this

way
has
made
us
certain
of
this
rule,
it
is
really
easy
to
see
that
the
dreams
which
we
imagine
while
asleep
should
not,
in
any
way,
make
us
doubt
the
truth
of
the
thoughts
we
have
while
awake.
For
if
it
happened,
even
while
we
were
sleeping,
that
we
had
some
really
distinct
idea,

as,
for
example,
in
the
case
of
a
geometer
inventing
some
new
proof,
the
fact
that
he
is
asleep
does
not
prevent
it
from
being
true,
and
as
for
error,
it
doesn't
matter
that
the
most
common
dreams
we
have,
which
consist
of
representing
to
us
various
objects
in
the
same
way
as
our
external

senses
do,
can
give
us
occasion
to
challenge
the
truth
of
such
ideas,
because
these
ideas
can
also
mislead
us
often
enough
without
our
being
asleep,
as,
for
example,
when
those
people
suffering
from
jaundice
see
all
objects
as
yellow,
or
when
the
stars
or
other
bodies
at
a
great
distant
appear
to
us
much

smaller
than
they
are.
For,
finally,
whether
we
are
awake
or
asleep,
we
should
never
allow
ourselves
to
be
persuaded
except
by
the
evidence
of
our
reason.
And
people
should
note
that
I
say
of
our
reason
and
not
of
our
imagination
or
of
our
senses,
since
even
though
we
see
the
sun
very
clearly,

we
should
not
for
that
reason
judge
that
it
is
only
the
size
which
we
see
it,
and
we
can
easily
imagine
distinctly
the
head
of
a
lion
mounted
on
the
body
of
goat,
without
having
to
conclude,
because
of
that,
there
is
a
chimera
in
the
world:
for
reason
does
not
dictate
to
us

that
what
we
see
or
imagine
in
this
way
is
true,
but
it
does
dictate
to
us
that
all
our
ideas
or
notions
must
have
some
foundation
in
truth,
for
it
would
not
be
possible
that
God,
who
is
completely
perfect
and
totally
truthful,
put
them
in
us
without
that.
**(11)** Because
our
reasoning
is
never

so
evident
or
complete
during
sleeping
as
while
we
are
awake,
although
then
sometimes
our
imaginations
are
as
vital
or
explicit,
or
more
so,
reason
also
dictates
to
us
that
our
ideas
cannot
all
be
true,
because
we
are
not
completely
perfect
—
those
which
contain
the
truth
must
without
exception
come
in
those
we

experience
while
awake
rather
than
in
those
we
have
while
asleep.

# PART FIVE

I
would
be
very
pleased
to
continue
and
make
you
see
here
all
the
chain
of
other
truths
which
I
deduced
from
these
first
ones.
But
because
that
would
require
that
I
talked
of
several
questions
which
are

controversial
among
scholars,
things
I
do
not
want
to
get
mixed
up
with,
I
think
it
would
be
better
to
refrain
from
that
and
speak
only
in
general
about
what
these
matters
are,
so
that
I
leave
it
to
wiser
heads
to
judge
if
it
would
be
useful
for
the
public
to
be
informed
about

more
particular
details.
I
have
always
lived
firm
in
the
resolution
that
I
had
taken
not
to
assume
any
other
principle
than
the
one
which
I
have
just
used
to
demonstrate
the
existence
of
God
and
the
soul,
and
to
accept
nothing
as
true
which
did
not
seem
to
me
more
clear
and
more
certain

than
the
proofs
of
geometers
had
seemed
to
me
previously.
Nonetheless,
I
venture
to
say
that,
not
only
did
I
find
a
way
of
satisfying
myself
in
a
short
time
concerning
all
the
difficult
principles
which
people
are
accustomed
to
deal
with
in
philosophy,
but
also
I
noticed
certain
laws
which
God
has
established
in

nature
in
such
a
way
and
of
which
he
has
impressed
such
notions
in
our
souls,
that
after
we
have
reflected
on
them
sufficiently,
we
cannot
doubt
that
they
are
precisely
observed
in
everything
which
exists
or
which
acts
in
the
world.
Then,
as
I
considered
the
consequence
of
these
laws,
it
seemed
to
me

that
I
had
discovered
several
truths
more
useful
and
more
important
than
everything
which
I
had
previously
learned
or
even
hoped
to
learn.

But
since
I
attempted
to
explain
the
principles
in
a
treatise
which
certain
considerations
prevented
me
from
publishing,
I
do
not
know
how
better
to
make
them
known
than
stating
here

in
summary
form
what
that
treatise
contains.
Before
writing
that
text,
I
had
the
intention
of
including
in
it
all
that
I
thought
I
knew
concerning
the
nature
of
material
things.
But
just
as
painters
cannot
portray
equally
well
in
a
flat
picture
all
the
various
surfaces
of
a
solid
body
and
choose
one
of

the
main
surfaces,
which
they
set
by
itself
facing
the
light
and,
by
placing
the
others
in
shadows,
do
not
allow
anything
to
appear
more
than
one
can
see
by
looking
at
them,
in
the
same
way,
fearing
that
I
could
not
put
in
my
discourse
everything
I
had
in
my
thoughts,
I
tried
only

to
reveal there fairly
fully
what
I
understood
about
light,
and
then
at
the
appropriate
time,
to
add
something
about
the
sun
and
the
fixed
stars,
because
almost
all
light
comes
from
them,
about
the
heavens,
because
they
transmit
light;
about
the
planets,
comets,
and
the
earth,
because
they
reflect
light,
and
in
particular
about
all
the

bodies
on
earth,
because
they
are
coloured,
or
transparent,
or
luminous,
and
finally
about
man,
because
he
is
the
one
who
looks
at
these
things.
Even
so,
in
order
to
shade
in
all
these
things
a
little
and
to
be
able
to
speak
more
freely
of
what
I
was
judging,
without
being
obliged
to
follow

or
to
refute
received
opinions
among
the
scholars,
I
resolved
to
leave
everyone
here
to
their
disputes
and
to
speak
only
of
what
would
happen
in
a
new
world,
if
God
now
created
somewhere
in
imaginary
space
enough
material
to
compose
it,
and
if
He
set
in
motion,
in
a
varied
and
disorderly
way,
the

various
parts
of
this
material,
so
that
it
created
a
chaos
as
confused
as
poets
could
make
it,
and
then
afterwards
He
did
nothing
other
than
lend
His
ordinary
help
to
nature
and
allow
it
to
act
according
to
the
laws
which
He
established.
**(12)**
So
first
of
all
I
described
this
material
and
tried

to
picture
it
in
such
a
way
that
there
is
nothing
in
the
world,
it
seems
to
me,
clearer
and
more
intelligible,
except
what
has
been
said
from
time
to
time
about
God
and
the
soul.
For
I
even
explicitly
assumed
that
in
the
world
there
were
none
of
those
forms
or
qualities
which
people

argue
about
in
the
schools,
nor,
in
general,
anything
the
knowledge
of
which
was
not
so
natural
to
our
souls
that
we
could
not
even
pretend
to
remain
ignorant
of
it.
In
addition,
I
made
known
the
laws
of
nature,
and
without
basing
my
reasoning
on
any
principle
other
than
the
infinite
perfections
of
God,

I
tried
to
demonstrate
all
of
these
laws
about
which
one
could
entertain
any
doubts,
to
show
that
they
are
such
that,
although
God
could
have
created
several
worlds,
there
would
not
be
one
where
these
failed
to
be
observed.
After
that,
I
showed
how
the
greatest
part
of
material
in
chaos
would
have
to,

as
a
result
of
these
laws,
organize
and
arrange
itself
in
a
certain
way
which
made
it
similar
to
our
heavens,
how,
in
so
doing,
some
of
its
parts
must
have
made
up
an
earth
and
some
parts
planets
and
comets,
and
some
other
parts
a
sun
and
fixed
stars.
And
at
this
point,
dwelling

on
the
subject
of
light,
I
explained
at
some
length
the
nature
of
light
which
must
be
found
in
the
sun
and
the
stars,
how
from
there
it
crossed
in
an
instant
the
immense
distances
of
heavenly
space,
and
how
it
is
reflected
from
the
planets
and
comets
towards
the
earth.
To
this
I
added

several
things
concerning
the
material,
the
arrangement,
the
movements,
and
all
the
various
qualities
of
these
heavens
and
these
stars.
Consequently,
I
thought
I
had
said
enough
about
these
matters
to
make
known
the
fact
that
one
observes
nothing
in
these
features
of
this
world
which
must
not,
or
at
least
could
not,
appear
entirely

similar
to
those
of
the
world
which
I
described.
From
there
I
went
on
to
speak
in
particular
about
the
earth,
about
how,
although
I
had
expressly
assumed
that
God
had
placed
no
heaviness
in
the
material
of
which
it
is
composed,
all
its
parts
could
not
help
tending
precisely
to
its
centre,
how,
having

water
and
air
on
its
surface,
the
arrangement
of
the
heavens
and
the
stars,
and
particularly
of
the
moon,
had
to
create
on
earth
an
ebb
and
flow
similar
in
all
its
features
to
the
ones
we
see
in
our
oceans,
and,
beyond
that,
a
certain
flow
in
the
water
as
well
as
in
the

air,
from
east
to
west,
like
the
one
we
also
observe
between
the
tropics,
how
the
mountains,
seas,
fountains,
and
rivers
can
naturally
form
out
of
that,
how
earth's
metals
come
into
the
mines,
and
how
the
plants
on
earth
grow
in
the
fields,
and,
in
general,
how
all
the
things
we
call
mixed
or

composite
could
be
produced
on
earth.
And,
among
other
things,
because
I
know
of
nothing,
other
than
the
stars,
which
produces
light
except
fire,
I
studied
to
understand
really
clearly
everything
associated
with
the
nature
of
fire,
how
it
arises,
how
it
is
nourished,
how
sometimes
it
has
heat
without
light
and
sometimes
light
without

heat,
how
it
can
introduce
various
colours
in
different
bodies,
as
well
as
various
other
qualities,
how
it
melts
some
things
and
makes
others
harder,
how
it
can
consume
almost
everything
or
convert
it
into
ash
and
smoke,
and
finally
how,
out
of
these
cinders,
simply
by
the
violence
of
its
actions,
it
makes
glass. For

this
transformation
of
cinders
into
glass
seemed
to
be
as
wonderful
as
anything
else
which
happens
in
nature,
and
I
took
particular
pleasure
in
describing
it.

However,
I
did
not
want
to
conclude
from
all
these
things
that
this
world
was
created
in
the
fashion
which
I
was
proposing.
For
it
is
much
more

probable
that
God
made
the
world
from
the
beginning
just
what
it
had
to
be.
But
it
is
certain,
and
this
is
an
opinion
commonly
accepted
among
theologians,
that
the
actions
by
which
God
now
preserves
the
world
are
exactly
the
same
as
the
method
by
which
He
created
it,
in
such
a
way
that

even
if
He
did
not
give
it
at
the
start
any
form
other
than
a
chaos,
providing
that
He
had
first
established
the
laws
of
nature
and
had
given
His
assistance,
so
that
it
would
act
as
it
usually
does,
we
can
believe,
without
denying
the
miracle
of
creation,
that
because
of
these
facts
alone

all purely material things would have been able, over time, to become the way we now observe them, and their nature is much easier to conceive when one sees them born gradually in this way than if one thinks of them only as made all at once in a finished state. **(13)**

From the

description of the inanimate bodies and of plants, I moved onto the bodies of animals and especially the body of man. But because I did not yet have sufficient knowledge to speak of that in the same way as of other things, that is to say, to speak of effects in terms of causes, by

revealing
the
seeds
and
the
methods
by
which
nature
had
to
produce
them,
I
contented
myself
with
assuming
that
God
formed
the
human
body
completely
like
one
of
our
own,
both
in
the
external
shape
of
its
limbs
and
in
the
arrangement
of
its
inner
organs,
without
making
them
of
any
material
other
than
the

one
which
I
had
described
and
without,
at
the
start,
placing
in
that
body
any
reasonable
soul
or
any
other
thing
to
serve
the
body
as
a
vegetative
or
sensitive
soul,
except
that
He
kindled
in
its
heart
one
of
those
fires
without
light
which
I
had
already
explained
and
which
I
conceived
as
in

no
way
different
in
its
nature
from
the
fire
which
heats
hay
when
it
is
stored
before
it
is
dry
or
which
makes
new
wines
bubble
when
they
are
allowed
to
ferment
on
the
crushed
grapes.
For,
by
examining
the
functions
which,
as
a
result
of
this
assumption,
could
be
present
in
this
body,
I

found
precisely
all
those
which
could
be
in
us
without
our
being
able
to
think,
and
thus
those
functions
to
which
our
soul,
that
is
to
say,
that
distinct
part
of
the
body
whose
nature
is
solely
to
think
(as
I
have
said
above)
does
not
contribute,
functions
which
are
exactly
the
same
as
those

in
which
we
can
say
the
animals
without
reason
are
similar
to
us.
But
in
doing
this,
I
could
not
find
any
of
those
which,
because
they
are
dependent
on
thought,
are
the
only
ones
which
pertain
to
us,
to
the
extent
that
we
are
men;
whereas,
I
found
all
of
them
afterwards,
once
I

assumed
the
God
had
created
a
reasonable
soul
and
joined
it
to
this
body
in
the
particular
way
which
I
described.

But
so
that
you
can
see
how
I
dealt
with
this
material
in
that
treatise,
I
want
to
put
in
here
the
explanation
for
the
movement
of
the
heart
and
the
arteries,
the

first
and
the
most
universal
thing
which
one
observes
in
animals.
From
that
one
will
easily
assess
what
one
should
think
of
all
the
others.
And
so
that
people
have
less
difficulty
understanding
what
I
am
going
to
say,
I
would
like
those
who
are
not
versed
in
anatomy
to
take
the
trouble,
before
reading

this,
to
have
the
heart
of
some
large
animal
with
lungs
dissected
in
front
of
them.
For
it
is
in
all
respects
sufficiently
similar
to
the
heart
in
man.
And
I
would
like
them
to
have
demonstrated
to
them
the
two
chambers
or
cavities
which
are
in
that
heart.
First,
there
is
one
chamber
on

its
right
side,
to
which
two
very
large
tubes
correspond,
that
is,
the *vena*
*cava*,
which
is
the
principal
receptacle
of
blood
and,
as
it
were,
the
trunk
of
the
tree
of
which
all
the
other
veins
of
the
body
are
the
branches,
and
the *vena*
*arteriosa*,
which
has,
with
that
label,
been
poorly
named,
because
it

is,
in
fact,
an
artery,
the
one
which,
originating
at
the
heart,
divides
up,
after
leaving
the
heart,
into
several
branches,
which
go
out
to
distribute
themselves
throughout
the
lungs.
**(14)** Then
there
is
the
chamber
on
the
left
side
of
the
heart,
to
which,
in
the
same
way,
two
tubes
correspond,
which
are
as
large

or
larger
than
the
ones
just
mentioned:
that
is,
the
venous
artery,
which
is
also
misnamed,
because
it
is
nothing
but
a
vein
which
comes
from
the
lungs,
where
it
is
divided
into
several
branches
interwoven
with
those
from
the
arterial
vein
and
with
those
associated
with
the
tube
called
the
windpipe,
through
which
air

enters
for
respiration;
and
the
large
artery
which,
leaving
the
heart,
sends
its
branches
throughout
the
body.
I
would
also
like
someone
to
point
out
carefully
to
them
the
eleven
small
strips
of
skin
which,
just
like
so
many
small
doors,
open
and
close
the
four
openings
in
these
two
chambers,
that
is,
three
at

the
entry
of
the
vena
cava,
where
they
are
so
arranged
that
they
cannot
in
any
way
prevent
the
blood
contained
in
the
vena
cava
from
flowing
into
the
right
chamber
of
the
heart
and,
at
the
same
time,
effectively
prevent
its
ability
to
flow
out;
three
gates
at
the
entry
of
arterial
vein,
which,

being
arranged
in
precisely
the
opposite
way,
easily
allow
the
blood
in
this
chamber
to
move
toward
the
lungs
but
do
not
allow
the
blood
in
the
lungs
to
return
to
that
chamber
of
the
heart.
Then,
in
the
same
way,
there
are
two
other
strips
of
membrane
at
the
opening
to
the
venous
artery

which
allow
the
blood
from
the
lungs
to
flow
towards
the
left
chamber
of
the
heart,
but
prevent
its
return,
and
there
are
three
at
the
entry
of
the
great
artery
which
allow
blood
to
leave
the
heart
but
prevent
it
from
returning
there.
There
is
no
need
to
seek
for
any
reason
for
the

number
of
these
membranes,
beyond
the
fact
that
since
the
opening
of
the
venous
artery
is
an
oval,
because
of
its
location,
it
can
be
readily
closed
with
two;
whereas,
since
the
others
are
round,
they
can
be
more
easily
closed
with
three.
In
addition,
I
would
like
people
to
notice
that
the
large
artery

and
the
arterial
vein
have
a
composition
much
harder
and
firmer
than
the
venous
artery
and
the
vena
cava,
that
these
last
two
get
bigger
before
entering
the
heart
and
there
make
a
structure
similar
to
two
small
sacks,
called
the
auricles
of
the
heart,
which
are
composed
of
flesh
like
that
of
the
heart,

that
there
is
always
more
heat
in
the
heart
than
in
any
other
place
in
the
body;
and
finally
that,
if
any
drop
of
blood
enters
its
cavities,
this
heat
in
the
heart
is
capable
of
making
the
drop
quickly
swell
and
expand,
just
as
all
liquors
generally
do
when
one
lets
them
fall
drop

by
drop
into
some
really
hot
container.

After
all
that,
I
have
no
need
to
say
anything
else
to
explain
the
movement
of
the
heart,
other
than
the
following:
when
its
cavities
are
not
full
of
blood,
then
necessarily
blood
flows
from
the
vena
cava
into
the
right
chamber
and
from
the
venous
artery

into
the
left,
because
these
two
blood
vessels
are
always
full
and
their
openings,
which
are
oriented
towards
the
heart,
cannot
then
be
blocked.
But
as
soon
as
two
drops
of
blood
have
entered
the
heart
in
this
way,
one
in
each
of
its
chambers,
these
drops,
which
could
only
be
of
a
considerable
size

because
the
openings
through
which
they
enter
are
very
large
and
the
vessels
they
come
from
are
really
full
of
blood,
become
thinner
and
expand,
on
account
of
the
heat
they
encounter
there,
as
a
result
of
which
they
make
the
entire
heart
expand,
and
then
they
push
against
and
close
the
five
small
gates

which
stand
at
the
openings
of
the
two
vessels
from
which
these
drops
of
blood
have
come,
thus
preventing
any
more
blood
from
moving
down
into
the
heart.
And,
continuing
to
become
increasingly
thinner,
the
drops
of
blood
push
against
and
open
the
six
other
small
gates
which
stand
at
the
opening
of
the
two

other
vessels,
through
which
they
flow
out,
in
this
way
causing
all
the
branches
of
the
arterial
vein
and
great
artery
to
expand,
almost
at
the
same
instant
as
the
heart,
which
immediately
afterwards
contracts,
as
do
these
arteries
as
well,
because
the
blood
which
has
entered
them
gets
colder
again
there,
and
their
six

small
gates
close
once
more.
Then
the
five
valves
on
the
vena
cava
and
the
venous
artery
re-
open,
and
allow
passage
of
two
more
drops
of
blood,
which,
once
more,
make
the
heart
and
the
arteries
expand,
just
as
in
the
preceding
steps.
And
because
the
blood
which
enters
the
heart
in
this
manner

passes
through
these
two
small
sacks
called
auricles,
this
motion
causes
the
movement
of
the
auricles
to
be
the
opposite
of
the
heart's
movement
—
they
contract
when
the
heart
expands.
As
for
the
rest,
so
that
those
who
do
not
understand
the
force
of
mathematical
proofs
and
who
are
not
accustomed
to
distinguishing
true

reasons
from
probable
reasons
do
not
venture
to
deny
this
matter
without
examining
it,
I
wish
to
advise
them
that
this
movement
which
I
have
just
explained
is
as
necessarily
a
result
of
the
mere
arrangement
of
the
organs
which
one
can
see
in
the
heart
with
one's
own
eyes
and
of
the
heat
which

one
can
feel
there
with
one's
fingers
and
of
the
nature
of
blood
which
one
can
recognize
from
experience,
as
the
movement
of
a
clock
is
necessarily
a
result
of
the
force,
the
placement,
and
the
shape
of
its
counter-
weights
and
wheels.

But
if
someone
asks
how
the
blood
in
the
veins
does

not
exhaust
itself
as
it
flows
continually
into
the
heart
in
this
way
and
how
the
arteries
are
not
overfilled
because
all
the
blood
which
passes
through
the
heart
goes
into
them,
there's
no
need
for
me
to
say
anything
in
reply
other
than
what
has
already
been
written
by
an
English
doctor,
to
whom

we
must
give
the
honour
of
having
broken
the
ice
in
this
area
and
of
being
the
first
to
teach
that
there
are
several
small
passages
at
the
extremities
of
the
arteries
through
which
the
blood
which
they
receive
from
the
heart
enters
into
the
small
branches
of
the
veins,
from
where
it
proceeds
to

move
once
again
towards
the
heart,
so
that
its
passage
is
nothing
other
than
a
constant
circulation.
**(15)**
He
proves
this
really
well
by
the
common
experience
of
surgeons
who,
having
bound
up
an
arm
moderately
tightly
above
a
place
where
they
have
opened
a
vein,
cause
the
blood
to
flow
out
more
abundantly
than

if
they
had
not
tied
the
arm.
And
the
opposite
happens
if
they
place
the
binding
below
the
cut,
between
the
hand
and
the
opening,
or
if
they
make
the
binding
above
the
opening
very
tight.
For
it
is
clear
that
the
binding,
when
moderately
tight,
can
only
prevent
the
blood
which
is
already
in

the
arm
from
returning
towards
the
heart
by
the
veins,
but
in
doing
that
the
binding
does
not
stop
the
blood
from
continuing
to
flow
to
the
place
from
the
arteries,
because
the
arteries
are
situated
below
the
veins
and
because
the
skin
of
the
arteries,
being
harder,
is
less
easy
to
press
down.
Thus,

the
blood
which
comes
from
the
heart
tends
to
move
with
more
force
through
the
arteries
towards
the
hand
than
it
does
in
returning
from
the
hand
towards
the
heart
through
the
veins.
And
because
this
blood
leaves
the
arm
by
the
opening
in
one
of
the
veins,
it
must
necessarily
be
the
case
that

there
are
some
passages
below
this
binding,
that
is
to
say,
towards
the
extremities
of
the
arm,
through
which
it
can
come
there
from
the
arteries.
He
[Harvey]
also
demonstrates
really
well
what
he
says
about
the
flow
of
blood
through
certain
small
membranes
which
are
so
arranged
in
various
places
along
the
veins
that

they
do
not
allow
blood
to
move
in
the
veins
from
the
middle
of
the
body
towards
the
extremities,
but
only
to
return
from
the
extremities
towards
the
heart.
Moreover,
he
demonstrates
this
by
an
experiment
which
shows
that
all
the
blood
which
is
in
the
body
can
leave
it
in
a
very
little
time

by
a
single
artery,
if
it
is
cut,
even
if
it
has
been
tightly
bound
really
close
to
the
heart
and
cut
between
the
heart
and
the
binding,
so
that
one
simply
could
not
imagine
any
explanation
other
than
that
the
blood
flowing
out
is
coming
from
the
heart.

But
there
are
several
other

things
which
attest
to
the
fact
that
the
true
cause
of
this
movement
of
blood
is
as
I
have
described
it.
For,
firstly,
the
difference
which
one
notices
between
the
blood
which
comes
from
the
veins
and
the
blood
which
flows
out
of
the
arteries
could
come
about
only
if
the
blood
is
rarefied
and,

as
it
were,
distilled
in
passing
through
the
heart.
It
is
more
subtle, more
lively,
and
warmer
immediately
after
leaving
the
heart,
that
is
to
say,
in
the
arteries,
than
it
is
shortly
before
entering
the
heart,
that
is
to
say,
when
it
is
in
the
veins.
And
if
one
pays
attention,
one
will
find
that

this
difference
is
only
readily
apparent
close
to
the
heart
and
not
so
evident
in
places
which
are
more
distant
from
it.
Then,
the
hardness
of
the
skins
making
up
the
arterial
vein
and
the
large
artery
shows
sufficiently
well
that
the
blood
beats
against
them
with
greater
force
than
it
does
against
the
veins.

And
why
would
the
left
chamber
of
the
heart
and
the
great
artery
be
more
ample
and
larger
than
the
right
chamber
and
the
arterial
vein,
if
it
were
not
for
the
fact
that
the
blood
of
the
venous
artery,
which
has
only
been
in
the
lungs
since
passing
through
the
heart,
is
more
subtle

and
more
strongly
and
more
easily
rarefied
than
the
blood
which
comes
immediately
from
the
vena
cava?
And
what
could
doctors
diagnose
by
testing
the
pulse,
if
they
did
not
know,
in
keeping
with
the
fact
that
blood
changes
its
nature,
that
it
can
be
rarefied
by
the
heat
of
the
heart
more
or
less

strongly
and
more
or
less
quickly
than
before?
And
if
one
examines
how
this
heat
is
transferred
to
the
other
limbs,
is
it
not
necessary
to
admit
that
it
is
by
means
of
the
blood,
which,
passing
through
the
heart,
is
re-
heated
in
it
and
from
there
spreads
throughout
the
entire
body?
That's
the

reason
why,
if
one
takes
blood
from
some
part
of
the
body,
in
that
very
process
one
takes
the
heat,
and
even
if
the
heart
were
as
hot
as
a
burning
fire,
it
would
not
be
sufficient
to
re-
heat
the
feet
and
the
hands
as
much
as
it
does,
if
it
did
not
continually

send
new
blood
there.
From
this
we
also
understand
that
the
true
purpose
of
respiration
is
to
bring
sufficient
fresh
air
into
the
lungs
to
ensure
that
the
blood
which
comes
from
the
right
chamber
of
the
heart,
where
it
has
been
rarefied
and,
as
it
were,
changed
into
vapour,
thickens
and
changes
back
again

into
blood,
before
falling
back
into
the
left
chamber,
without
which
it
would
not
be
fit
to
serve
as
nourishment
for
the
fire
there.
What
confirms
this
is
that
we
observe
that
the
animals
which
have
no
lungs
also
have
only
one
cavity
in
the
heart
and
that
children,
who
cannot
use
their
lungs
while

they
are
closed
up
in
their
mother's
womb,
have
an
opening
through
which
blood
flows
from
the
vena
cava
into
the
left
cavity
of
the
heart
and
a
passage
by
which
the
blood
comes
from
the
arterial
vein
into
the
large
artery
without
passing
through
the
lungs.
Next,
how
would
digestion
take
place
in
the

stomach,
if
the
heart
did
not
send
heat
there
through
the
arteries
and
with
that
some
of
the
more
easily
flowing
parts
of
the
blood
which
help
to
dissolve
the
food
which
has
been
sent
there?
And
the
action
which
converts
the
juice
of
this
food
into
blood
—
surely
that
is
easy
to
understand,

if
one
considers
that
it
is
distilled,
as
it
passes
and
re-
passes
through
the
heart,
perhaps
more
than
one
or
two
hundred
times
each
day?
What
else
do
we
need
to
explain
nutrition
and
the
production
of
the
various
humours
in
the
body,
other
than
to
say
that
the
force
with
which
the
blood,

as
it
gets
rarefied,
passes
from
the
heart
towards
the
extremities
of
the
arteries,
brings
it
about
that
some
portions
of
it
stop
among
those
parts
of
the
limbs
where
they
are,
and
there
take
the
place
of
some
other
parts
which
the
blood
pushes
away,
and
that,
depending
on
the
situation
or
the
shape

or
the
smallness
of
the
pores
which
these
parts
of
blood
encounter,
some
of
them
go
off
to
certain
places
rather
than
to
others,
in
the
same
way
that
anyone
can
see
with
various
screens,
which,
being
pierced
in
different
ways,
serve
to
separate
various
grains
from
one
another?
Finally,
what
is
most
remarkable
in

all
this
is
the
generation
of
animal
spirits
which
resemble
a
very
slight
wind
or
rather
a
very
pure
and
very
lively
flame
which,
by
climbing
continually
in
great
quantities
from
the
heart
into
the
brain,
goes
from
there
through
the
nerves
into
the
muscles
and
gives
movement
to
all
the
limbs,
without
it
being

necessary to imagine any other cause which has the effect of making the most agitated and most penetrating parts of blood, those most appropriate for making up these animal spirits, move towards the brain rather than elsewhere, other than that the arteries which carry these parts of the blood are those which come from the

heart
toward
the
brain
by
the
most
direct
route
and
that,
following
the
laws
of
mechanics,
which
are
the
same
as
nature's
laws,
when
several
things
collectively
tend
to
move
towards
the
same
place
where
there
is
insufficient
room
for
all
of
them,
as
the
parts
of
blood
which
leave
the
left
cavity
of
the

heart
tend
towards
the
brain,
the
most
feeble
and
less
agitated
parts
must
be
turned
away
from
the
brain
by
the
strongest
parts.
In
this
way,
only
the
latter
parts
reach
the
brain.

I
explained
in
particular
detail
all
these
things
in
the
treatise
which
I
had
planned
to
publish
previously.
And
then
I

demonstrated
what
the
nerves
and
muscles
in
the
human
body
must
be
made
of,
so
that
the
animal
spirits,
once
inside
the
nerves,
would
have
the
power
to
move
its
limbs,
as
one
sees
that
heads,
for
a
little
while
after
being
cut
off,
continue
to
move
and
bite
the
earth,
in
spite
of
the

fact
that
they
are
no
longer
animated.
I
also
showed
what
changes
must
take
places
in
the
brain
to
cause
the
waking
state,
sleep,
and
dreams,
how
light,
sounds,
smells,
tastes,
heat,
and
all
the
other
qualities
of
external
objects
could
imprint
various
ideas
on
the
brain
through
the
mediation
of
the
senses,
just
as

hunger,
thirst,
and
the
other
inner
passions
can
also
send
their
ideas
to
the
brain;
what
must
be
understood
by
common
sense
where
these
ideas
are
taken
in,
by
memory
which
preserves
them,
and
by
fantasy
which
can
change
them
in
various
ways
and
compose
new
ones,
and,
in
the
same
way,
distribute
animal
spirits

to
the
muscles
and
make
the
limbs
of
the
body
move
in
all
the
different
ways
—
in
relation
to
the
objects
which
present
themselves
to
the
senses
and
in
relation
to
the
interior
physical
passions
—
just
as
our
bodies
can
move
themselves
without
being
led
by
the
will.
None
of
this
will
seem

strange
to
those
who
know
how
many
varieties
of *automata*,
or
moving
machines,
human
industry
can
make,
by
using
only
very
few
pieces
in
comparison
with
the
huge
number
of
bones,
muscles,
nerves,
arteries,
veins,
and
all
the
other
parts
in
the
body
of
each
animal.
They
will
look
on
this
body
as
a
machine,
which,

having
been
made
by
the
hand
of
God,
is
incomparably
better
ordered
and
more
inherently
admirable
in
its
movements
than
any
of
those
which
human
beings
could
have
invented.
And
here,
in
particular,
I
stopped
to
reveal
that
if
there
were
machines
which
had
the
organs
and
the
external
shape
of
a
monkey
or
of

some
other
animal
without
reason,
we
would
have
no
way
of
recognizing
that
they
were
not
exactly
the
same
nature
as
the
animals;
whereas,
if
there
was
a
machine
shaped
like
our
bodies
which
imitated
our
actions
as
much
as
is
morally
possible,
we
would
always
have
two
very
certain
ways
of
recognizing
that
they

were
not,
for
all
their
resemblance,
true
human
beings.
The
first
of
these
is
that
they
would
never
be
able
to
use
words
or
other
signs
to
make
words
as
we
do
to
declare
our
thoughts
to
others. For
one
can
easily
imagine
a
machine
made
in
such
a
way
that
it
expresses
words,
even
that

it
expresses
some
words
relevant
to
some
physical
actions
which
bring
about
some
change
in
its
organs
(for
example,
if
one
touches
it
in
some
spot,
the
machine
asks
what
it
is
that
one
wants
to
say
to
it;
if
in
another
spot,
it
cries
that
one
has
hurt
it,
and
things
like
that),
but

one
cannot
imagine
a
machine
that
arranges
words
in
various
ways
to
reply
to
the
sense
of
everything
said
in
its
presence,
as
the
most
stupid
human
beings
are
capable
of
doing.
The
second
test
is
that,
although
these
machines
might
do
several
things
as
well
or
perhaps
better
than
we
do,
they
are
inevitably

lacking in some others, through which we would discover that they act, not by knowledge, but only by the arrangement of their organs. For, whereas reason is a universal instrument which can serve in all sorts of encounters, these organs need some particular arrangement for each particular action. As a result of that, it is

morally impossible that there is in a machine's organs sufficient variety to act in all the events of life in the same way that our reason empowers us to act. Now, by these two same means, one can also recognize the difference between human beings and beasts. For it is really remarkable that there are

no
men
so
dull
and
stupid,
including
even
idiots,
who
are
not
capable
of
putting
together
different
words
and
of
creating
out
of
them
a
conversation
through
which
they
make
their
thoughts
known;
by
contrast,
there
is
no
other
animal,
no
matter
how
perfect
and
how
successful
it
might
be,
which
can
do
anything
like

that.
And
this
inability
does
not
come
about
from
a
lack
of
organs
For
we
see
that
magpies
and
parrots
can
emit
words,
as
we
can,
but
nonetheless
cannot
talk
the
way
we
can,
that
is
to
say,
giving
evidence
that
they
are
thinking
about
what
they
are
uttering;
whereas,
men
who
are
born
deaf

and
dumb
are
deprived
of
organs
which
other
people
use
to
speak
—
just
as
much
as
or
more
than
the
animals
—
but
they
have
a
habit
of
inventing
on
their
own
some
signs
by
which
they
can
make
themselves
understood
to
those
who,
being
usually
with
them,
have
the
spare
time
to
learn

their
language.
And
this
point
attests
not
merely
to
the
fact
that
animals
have
less
reason
than
men,
but
to
the
fact
that
they
have
none
at
all.
For
we
see
that
it
takes
very
little
for
someone
to
learn
how
to
speak,
and
since
we
observe
inequality
among
the
animals
of
the
same
species

just
as
much
as
among
human
beings,
and
see
that
some
are
easier
to
train
than
others,
it
would
be
incredible
that
a
monkey
or
a
parrot
which
was
the
most
perfect
of
his
species
was
not
equivalent
in
speaking
to
the
most
stupid
child
or
at
least
a
child
with
a
troubled
brain,
unless

their
soul
had
a
nature
totally
different
from
our
own.
And
one
should
not
confuse
words
with
natural
movements
which
attest
to
the
passions
and
can
be
imitated
by
machines
as
well
as
by
animals,
nor
should
one
think,
like
some
ancients,
that
animals
talk,
although
we
do
not
understand
their
language.
For
if
that

were
true,
because
they
have
several
organs
related
to
our
own,
they
could
just
as
easily
make
themselves
understood
to
us
as
to
the
animals
like
them.
Another
truly
remarkable
thing
is
that,
although
there
are
several
animals
which
display
more
industry
in
some
of
their
actions
than
we
do,
we
nonetheless
see
that
they

do
not
display
that
at
all
in
many
other
actions.
Thus,
the
fact
that
they
do
better
than
we
do
does
not
prove
that
they
have
a
mind,
for,
if
that
were
the
case,
they
would
have
more
of
it
than
any
of
us
and
would
do
better
in
all
other
things;
it
rather
shows

that
they
have
no
reason
at
all,
and
that
it
is
nature
which
has
activated
them
according
to
the
arrangement
of
their
organs
—
just
as
one
sees
that
a
clock,
which
is
composed
only
of
wheels
and
springs,
can
keep
track
of
the
hours
and
measure
time
more
accurately
than
we
can,
for
all

our
care.

After
that,
I
described
the
reasonable
soul
and
revealed
that
it
cannot
be
inferred
in
any
way
from
the
power
of
matter,
like
the
other
things
I
have
spoken
about,
but
that
it
must
be
expressly
created,
and
I
described
how
it
is
not
sufficient
that
it
is
lodged
in
the
human

body
like
a
pilot
in
his
ship,
except
perhaps
to
move
its
limbs,
but
that
it
is
necessary
that
the
soul
is
joined
and
united
more
closely
with
the
body,
so
that
it
has,
in
addition,
feelings
and
appetites
similar
to
ours
and
thus
makes
up
a
true
human
being.
**(16)** As
for
the
rest,
here

I
went
on
at
some
length
on
the
subject
of
the
soul,
because
it
is
among
the
most
important.
For,
apart
from
the
error
of
those
who
deny
God,
which
I
believe
I
have
adequately
refuted
above,
there
is
nothing
which
distances
feeble
minds
from
the
right
road
of
virtue
more
readily
than
to
imagine

that
the
soul
of
animals
is
the
same
nature
as
our
own
and
that
thus
we
have
nothing
either
to
fear
or
to
hope
for
after
this
life,
any
more
than
flies
and
ants
do;
whereas,
once
one
knows
how
different
they
are,
one
understands
much
better
the
reasons
which
prove
that
the
nature
of

our
souls
is
totally
independent
of
the
body,
and
thus
it
is
not
at
all
subject
to
dying
along
with
the
body.
Then,
to
the
extent
that
one
cannot
see
other
causes
which
destroy
the
soul,
one
is
naturally
led
to
judge
from
that
that
the
soul
is
immortal.

**PART SIX**

It

is
now
three
years
since
I
reached
the
end
of
the
treatise
which
contains
all
these
things
and
since
I
started
to
revise
it
in
order
to
put
it
into
the
hands
of
a
printer.
Then
I
learned
that
people
to
whom
I
defer
and
whose
authority
over
my
actions
could
hardly
be
less
than

my
own
reason
over
my
thoughts
had
expressed
disapproval
of
an
opinion
about
physics
published
a
little
earlier
by
someone
else.
**(17)** I
do
not
wish
to
say
that
I
subscribed
to
that
opinion,
but,
although
I
had
observed
in
it
nothing
before
their
censure
which
I
could
imagine
prejudicial
to
religion
or
the
state,
and

thus
nothing
which
would
have
prevented
me
from
writing
it
if
reason
had
persuaded
me,
this
I
made
me
afraid
that
there
might
nonetheless
be
something
among
my
opinions
where
I
had
gone
astray,
notwithstanding
the
great
care
I
always
took
not
to
accept
new
ideas
into
my
beliefs
for
which
I
did
not
have

very
certain
proofs
and
not
to
write
anything
which
would
work
to
anyone's
disadvantage.
This
was
sufficient
to
oblige
me
to
alter
my
resolution
to
publish
my
opinions.
For
although
the
reasons
I
had
adopted
earlier
had
been
very
strong,
my
inclination,
which
has
always
led
me
to
hate
the
profession
of
producing
books,
made

me
immediately
find
enough
other
reasons
to
excuse
myself
in
this
matter.
And,
given
the
nature
of
these
reasons,
on
one
side
or
the
other,
not
only
am
I
quite
interested
in
stating
them
here,
but
the
public
may
perhaps
also
be
interested
in
knowing
them.

I
have
never
made
a
great
deal
of

the
things
which
come
from
my
own
mind,
so
while
I
gathered
no
other
fruits
from
the
method
I
was
using,
other
than
that
I
satisfied
myself
concerning
some
difficulties
in
the
speculative
sciences
or
else
that
I
tried
to
regulate
my
morals
by
reasons
which
my
method
taught
me,
I
did
not
think
myself

obliged
to
write
anything.
For
where
morals
are
concerned,
every
person
is
so
full
of
his
own
good
sense
that
it
would
be
possible
to
find
as
many
reformers
as
heads,
if
it
was
permitted
to
people
other
than
those
God
has
established
as
sovereigns
over
his
people
or
those
to
whom
he
has
given

sufficient
grace
and
zeal
to
be
prophets
to
try
changing
anything
in
our
morality.
Although
my
speculations
pleased
me
a
great
deal,
I
thought
that
other
people
also
had
their
own
speculations
which
pleased
them
perhaps
even
more.
But
immediately
after
I
had
acquired
some
general
notions
concerning
physics
and,
by
starting
to
test
them

on
various
particular
difficulties,
had
noticed
just
where
they
could
lead
and
how
much
they
differed
from
principles
which
people
have
used
up
to
the
present
time,
I
thought
that
I
could
not
keep
them
hidden
without
sinning
greatly
against
the
law
which
obliges
us
to
promote
as
much
as
we
can
the
general
good

of
all
men.
For
my
notions
had
made
me
see
that
it
is
possible
to
reach
understandings
which
are
extremely
useful
for
life,
and
that
instead
of
the
speculative
philosophy
which
is
taught
in
the
schools,
we
can
find
a
practical
philosophy
by
which,
through
understanding
the
force
and
actions
of
fire,
water,
air,
stars,

heavens,
and
all
the
other
bodies
which
surround
us
as
distinctly
as
we
understand
the
various
crafts
of
our
artisans,
we
could
use
them
in
the
same
way
for
all
applications
for
which
they
are
appropriate
and
thus
make
ourselves,
as
it
were,
the
masters
and
possessors
of
nature.
**(18)** But
it
was
not
only
a

desire
for
to
invent
an
infinite
number
of
devices
which
might
enable
us
to
enjoy
without
effort
the
fruits
of
the
earth
and
all
the
commodities
found
in
it,
but
mainly
also
my
desire
for
the
preservation
of
our
health,
which
is,
without
doubt,
the
principal
benefit
and
the
foundation
of
all
the
other
benefits

in
this
life.
For
even
the
mind
depends
so
much
on
the
temperament
and
the
condition
of
the
organs
of
the
body
that,
if
it
is
possible
to
find
some
means
to
make
human
beings
generally
wiser
and
more
skilful
than
they
have
been
up
to
this
point,
I
believe
we
must
seek
that
in

medicine.
It
is
true
that
the
medicine
now
practiced
contains
few
things
which
are
remarkably
useful.
But
without
having
any
design
to
denigrate
it,
I
am
confident
that
there
is
no
one,
not
even
those
who
make
a
living
from
medicine,
who
would
not
claim
that
everything
we
know
in
medicine
is
almost
nothing
in

comparison
to
what
remains
to
be
known
about
it
and
that
we
could
liberate
ourselves
from
an
infinity
of
illnesses,
both
of
the
body
and
the
mind,
and
also
perhaps
even
of
the
infirmities
of
ageing,
if
we
had
sufficient
knowledge
of
their
causes
and
of
all
the
remedies
which
nature
has
provided
for
us.

Now,
intending
to
spend
all
my
life
in
research
into
such
a
necessary
science
and
having
encountered
a
road
which
seemed
to
me
such
that
one
should
infallibly
find
this
science
by
following
it,
unless
one
was
prevented
either
by
the
brevity
of
one's
life
or
by
the
lack
of
experiments,
I
judged
that
there

was
no
better
remedy
against
these
two
obstacles
than
to
communicate
faithfully
to
the
public
the
little
I
had
found
and
to
invite
good
minds
to
try
to
move
on
further,
by
contributing,
each
according
to
his
own
inclination
and
power,
to
the
experiments
which
need
to
be
conducted
and
also
by
communicating
to
the

public
everything
they
learn,
so
that
the
most
recent
people
begin
where
the
previous
ones
have
finished.
If
we
thus
joined
the
lives
and
labours
of
many
people,
collectively
we
might
go
much
further
than
each
particular
person
could.

Besides,
I
noticed
that,
where
experiments
are
concerned,
they
are
increasingly
necessary
as
one's
knowledge

advances,
for
at
the
beginning
it
is
better
to
conduct
only
those
which
present
themselves
to
our
sense
and
which
we
cannot
ignore,
provided
that
we
engage
in
a
little
reflection,
rather
than
to
seek
out
more
rare
and
recondite
experiments,
because
these
rarer
ones
are
often
misleading,
when
we
do
not
yet
know
the

causes
of
the
more
common
phenomena,
and
the
circumstances
on
which
they
depend
are
almost
always
so
particular
and
so
precise,
that
it
is
very
difficult
to
observe
them.
But
in
this
work
I
kept
to
the
following
order:
first,
I
tried
to
find
the
general
principles
or
the
first
causes
of
everything
which
exists

or
could
exist
in
the
world,
without
considering
anything
germane
to
my
purpose
other
than
the
fact
that
God
alone
created
the
world,
not
deducing
anything
additional,
other
than
certain
grains
of
truth
which
are
naturally
in
our
souls.
After
that,
I
examined
what
were
the
first
and
most
common
effects
we
could
deduce
from

these
causes.
By
doing
that,
it
seems
to
me,
I
found
the
heavens,
the
stars,
and
earth,
and
even
on
the
earth
water,
air,
fire,
minerals,
and
some
other
things,
the
sort
which
are
the
most
common
of
all
and
the
simplest,
and
thus
the
easiest
to
know.
Then,
when
I
wanted
to
move
down

to
more
particular
matters,
so
many
varied
ones
presented
themselves
to
me
that
I
did
not
think
it
would
be
possible
for
the
human
mind
to
distinguish
the
forms
or
species
of
bodies
on
the
earth
from
an
infinity
of
others
which
could
exist
there
if
the
will
of
God
had
put
them
there
and,

thus,
that
one
could
not
adapt
them
to
our
use,
unless
one
proceeded
to
the
causes
through
the
effects
and
made
use
of
several
particular
experiments.
After
that,
I
turned
my
mind
onto
all
the
objects
which
had
ever
presented
themselves
to
my
senses.
I
venture
to
say
that
I
didn't
notice
in
them
anything

which
I
could
not
explain
easily
enough
by
the
principles
which
I
had
found.
But
I
must
also
confess
that
the
power
of
nature
is
so
ample
and
vast
and
its
principles
are
so
simple
and
so
general
that
I
observed
hardly
any
particular
effect
which
I
did
not
immediately
understand
as
being
capable
of

being
deduced
in
several
different
ways,
so
that
my
greatest
difficulty
is
usually
to
find
on
which
of
these
ways
the
effect
depends.
In
dealing
with
this
matter,
I
did
not
know
any
expedient
other
than,
once
again,
to
look
for
some
experiments
which
would
be
such
that
their
outcomes
would
not
be
the
same

if
one
of
these
ways
had
to
explain
it
rather
than
some
other
way.
As
for
the
rest,
I
am
now
at
a
point
where
I
perceive
well
enough,
it
seems
to
me,
the
method
one
has
to
use
to
make
most
of
those
experiments
which
can
serve
for
this
purpose.
But
I
also
see

that
they
are
of
such
a
kind
and
that
there
are
so
many
of
them
that
neither
my
hands
nor
my
income,
even
if
I
had
a
thousand
times
more
of
both
than
I
do,
could
suffice
for
all
of
them,
so
that
from
now
on
my
progress
in
understanding
nature
will
be
proportional
to

the
means
I
have
for
conducting
more
or
fewer
experiments.
This
was
what
I
promised
myself
I
would
make
known
in
the
treatise
which
I
had
written,
as
well
as
showing
in
it
the
practical
value
which
the
public
could
gain
from
these
experiments
so
clearly
that
I
would
oblige
all
those
who
wished
to

promote
the
general
well
being
of
man,
that
is
to
say,
all
those
who
are
truly
virtuous
and
who
are
not
false
by
pretending
to
virtue
or
merely
virtuous
by
public
opinion,
to
communicate
to
me
all
the
experiments
which
they
have
already
made,
as
well
as
to
help
me
in
researching
those
which
remain

to
be
done.

But
since
that
time
I
have
had
other
reasons
which
made
me
change
my
mind
and
think
that
I
really
must
continue
to
write
down
all
matters
which
I
judged
to
have
some
importance,
to
the
extent
that
I
discovered
truth
in
them,
and
to
bring
to
my
writing
the
same

care
that
I
would
if
I
wanted
it
published,
so
that
I
would
have
more
time
to
examine
such
things
well,
since
there
is
no
doubt
one
always
looks
more
closely
at
what
one
thinks
many
people
must
see
than
at
what
one
does
only
for
oneself,
and
often
matters
which
seemed
to
me
true

when
I
began
to
think
of
them
appeared
false
to
me
when
I
wished
to
put
them
on
paper.
By
writing
things
down,
I
would
not
lose
any
opportunity
to
benefit
the
public,
if
I
could,
and,
if
my
writings
are
worth
anything,
those
who
have
them
after
my
death
could
use
them
wherever
they

were
most
relevant.
But
I
thought
I
must
not,
on
any
account,
agree
that
they
be
published
during
my
life,
so
as
to
prevent
the
hostility
and
controversies
which
they
could
perhaps
arouse
and
the
sort
of
reputation
which
I
could
acquire
from
giving
me
any
occasion
to
waste
the
time
which
I
planned
to

use
to
instruct
myself.
For
although
it
is
true
that
each
man
is
obliged
to
provide
as
much
as
is
in
him
for
the
good
of
others
and
that
there
is
no
value
whatsoever
in
anything
which
has
no
benefit
for
anyone,
nevertheless
it
is
also
true
that
we
should
care
about
things
more
distant

than
the
present
and
that
it
is
good
to
forget
about
things
which
might
bring
some
benefit
to
those
now
living
when
one's
intention
is
to
create
other
things
which
will
bring
more
benefits
to
our
descendants.
In
fact,
I
really
wanted
people
to
understand
that
the
little
I
had
learned
up
to
this
point

is
almost
nothing
in
comparison
with
what
I
am
ignorant
of
and
what
I
do
not
despair
of
being
able
to
learn.
For
it
is
almost
the
same
with
those
who
discover
truth
little
by
little
in
the
sciences
as
it
is
with
those
who,
once
they
start
to
become
rich,
have
less
trouble
in

making large acquisitions than they did previously, when they were poorer, in making much smaller ones. Or, again, one can compare them to leaders of armies whose forces usually grow in proportion to their victories and who, in order to capture towns and provinces, need more leadership to maintain their forces after the loss of

a
battle
than
they
do
after
winning
one.
For
it
is
truly
a
matter
of
giving
battle
when
one
tries
to
overcome
all
the
difficulties
and
mistakes
which
prevent
us
from
reaching
an
understanding
of
the
truth.
And
it
is
a
battle
loss
when
one
accepts
some
false
opinion
concerning
any
matter
at
all
general

and
important.
Afterwards
one
requires
a
great
deal
more
skill
to
put
oneself
in
the
same
condition
one
was
in
previously
than
one
has
to
have
to
make
great
progress
when
one
already
has
confirmed
principles.
In
my
case,
if
I
have
previously
found
some
truths
in
the
sciences
(and
I
hope
that
the
matters

contained
in
this
volume
will
make
people
conclude
that
I
have
found
some),
I
can
say
that
those
are
only
the
consequences
of
and
dependent
upon
five
or
six
major
difficulties
which
I
overcame
and
that
I
count
these
as
so
many
battles
in
which
victory
was
on
my
side.
Still,
I
will
not
hesitate

to
state
that
I
think
I
need
to
win
only
two
or
three
others
like
those
in
order
to
reach
the
final
goal
of
my
project
and
that
I
am
not
so
advanced
in
years
that,
given
the
ordinary
course
of
nature,
I
still
can
have
enough
leisure
to
bring
my
project
to
its
conclusion.

But
I
think
that
I
am
all
the
more
obliged
to
manage
the
time
remaining
to
me,
now
that
I
have
more
hope
of
being
able
to
use
it
well,
and
I
would,
no
doubt,
have
many
chances
to
lose
that
time,
if
I
published
the
foundations
of
my
physics.
For
although
these
foundations
are

almost
all
so
evident
that
one
need
only
hear
them
to
believe
them
and
there
are
none
of
them
which,
in
my
view,
I
cannot
demonstrably
prove,
nevertheless,
because
it
is
impossible
that
they
will
agree
with
all
the
various
opinions
of
other
men,
I
anticipate
being
often
distracted
by
the
hostility
they
would
give

rise
to.

One
could
say
that
this
opposition
would
be
useful,
to
the
extent
it
makes
me
understand
my
mistakes,
and
that,
if
I
have
anything
good,
others
will
by
this
means
have
a
more
complete
understanding.
Since
several
people
can
see
more
than
one
man
by
himself,
if
people
begin
from
now
on

making
use
of
my
principles,
they
will
also
help
me
with
their
inventions.
But
even
though
I
recognize
that
I
am
extremely
prone
to
error
and
that
I
almost
never
have
faith
in
the
first
thoughts
which
come
to
me,
nevertheless
the
experience
which
I
have
of
objections
which
people
could
make
about
me
prevents

me
from
hoping
for
any
benefit
from
such
objections.
For
I
have
already
undergone
the
criticism
of
so
many
of
those
whom
I
held
as
friends
and
of
some
others
who
I
thought
considered
me
indifferently
and
even
of
some
in
whom
I
knew
malignity
and
envy
would
try
hard
enough
to
uncover
what
affection

concealed
from
my
friends.
But
it
rarely
happened
that
someone
made
an
objection
which
I
had
not
in
some
way
anticipated,
unless
it
was
really
distant
from
my
subject,
so
that
I
have
almost
never
met
any
critic
of
my
opinions
who
did
not
appear
to
me
to
be
less
rigorous
or
less
fair
than

myself.
Moreover,
I
have
never
observed
that
anyone
has
discovered
any
truth
of
which
people
were
previously
ignorant
by
means
of
the
disputes
practised
in
the
schools.
For
when
each
person
tries
to
emerge
victorious,
people
strive
much
harder
to
establish
probability
than
to
weigh
the
reasons
on
one
side
or
the
other,
and
those

who
have
been
good
pleaders
for
a
long
time
are
not,
on
that
account,
better
judges
afterwards.

As
for
the
practical
use
which
other
people
derive
from
the
communication
of
my
thoughts,
it
could
not
be
all
that
great,
since
I
have
not
taken
them
so
far
that
there
is
no
need
to
add

a
great
many
things
before
they
can
be
practically
applied.
And
I
think
I
can
say
without
vanity
that
if
there
is
anyone
who
can
do
that,
this
person
should
be
me
rather
than
anyone
else,
not
because
several
minds
incomparably
better
than
mine
could
not
be
found
in
this
world,
but
because
one
cannot

conceive
of
something
so
well
and
make
it
one's
own
when
one
learns
it
from
someone
else
as
when
one
comes
up
with
it
oneself.
What
is
really
true
about
this
material
is
that,
although
I
have
often
explained
some
of
my
opinions
to
people
with
very
good
minds,
who,
while
I
was
talking
to

them,
seemed
to
understand
my
opinions
very
clearly,
nonetheless,
when
they
have
repeated
them,
I
have
noticed
that
almost
always
they
have
changed
them
in
such
a
way
that
I
could
no
longer
admit
them
as
mine.
Incidentally,
I
am
more
than
happy
to
take
the
opportunity
here
to
beg
our
descendants
never
to
believe

anything
that
people
will
tell
them
comes
from
me,
when
I
never
divulged
them
myself,
and
I
am
not
astonished
at
the
extravagant
things
which
people
attribute
to
those
ancient
philosophers
whose
writing
we
do
not
possess.
I
do
not
judge
that
their
thoughts
were
really
irrational
on
that
account,
seeing
that
they
were
the

best
minds
of
their
times,
but
merely
assume
that
their
thoughts
have
been
misrepresented
to
us.
For
we
see
also
that
it
almost
never
happens
that
any
of
their
disciples
surpasses
them,
and
I
am
confident
that
the
most
passionate
of
those
people
who
follow
Aristotle
nowadays
would
consider
themselves
fortunate
if
they
could
have

as
much
knowledge
of
nature
as
he
had,
even
on
condition
that
they
would
never
know
any
more.
They
are
like
ivy
which
tends
not
to
climb
higher
than
the trees
which
support
it
and
which
often
even
comes down
again
when
it
has
reached
the
tree
tops.
For
it
seems
to
me
that
those
people
also

come
back
down,
that
is,
make
themselves
in
some
way
less
knowledgeable
than
if
they
were
to
abandon
their
studying,
when,
not
content
with
knowing
everything
intelligibly
explained
by
their
author,
they
wish
to
find,
beyond
that,
the
solution
to
several
difficulties
about
which
he
has
said
nothing
and
has
perhaps
never
even
thought.
However,

their
way
of
practising
philosophy
is
extremely
comfortable
for
those
who
have
nothing
but
really
mediocre
minds,
for
the
obscurity
of
the
distinctions
and
the
principles
they
use
enables
them
to
speak
of
everything
as
boldly
as
if
they
understood
what
they
were
talking
about
and
to
defend
everything
that
they
state
against
the
most

subtle
and
skillful
minds,
without
anyone
having
the
means
to
argue
against
them.
In
this
it
strikes
me
they
are
similar
to
a
blind
man
who,
in
order
to
fight
on
equal
terms
against
someone
who
can
see,
makes
him
come
into
the
bottom
of
some
really
obscure
cave.
And
I
can
state
that
such

people
have
an
interest
in
my
abstaining
from
publishing
the
principles
of
philosophy
I
use,
because,
given
that
they
are
very
simple
and
very
evident,
if
I
published
them,
I
would
be
doing
roughly
the
equivalent
of
opening
some
windows
and
bringing
the
light
of
day
into
this
cave
where
they
have
gone
down
to

fight each other. But even the best minds have no occasion to want to know these principles. For if they want to know how to speak about everything and to acquire the reputation of being scholarly, they will get there more easily in contenting themselves with probability which can be found in all sorts of

matters
without
great
trouble,
rather
than
by
seeking
out
the
truth,
which
is
not
discovered
except
little
by
little
in
some
matters
and
which,
when
it
is
a
question
of
speaking
of
other
matters,
requires
us
to
confess
frankly
that
we
are
ignorant
of
them.
If
they
would
rather
have
the
undoubtedly
preferable
condition
of

knowing
a
few
truths
over
the
vanity
of
appearing
to
be
ignorant
about
nothing,
and
if
they
wish
to
follow
a
plan
similar
to
my
own,
for
that
they
do
not
need
me
to
say
anything
more
to
them
than
I
have
already
said
in
this
discourse.
For
if
they
are
capable
of
moving
on

further
than
I
have
done,
they
will
also,
with
all
the
more
reason,
find
for
themselves
everything
I
think
I
have
found.
Since
I
have
never
looked
at
anything
except
in
due
order,
it
is
certain
that
what
remains
for
me
to
discover
is
inherently
more
difficult
and
more
hidden
than
what
I
have
been

able
to
find
up
to
this
point,
and
they
would
have
much
less
pleasure
in
learning
that
from
me
than
from
themselves.
Beyond
that,
the
habit
they
will
acquire
by
searching
first
for
easy
things
and
then
moving
on
gradually
by
degrees
to
other
more
difficult
things
will
serve
them
better
than
all
my
instructions

will
be
able
to.
As
for
me,
I
am
convinced
that
if
I
had
been
taught
from
my
youth
all
the
truths
which
I
have
found
since
my
demonstrations
and
if
I
had
had
no
trouble
in
learning
them,
I
would
perhaps
have
never
known
any
others.
At
the
very
least
I
would
never
have

acquired
the
habit
and
the
skill
which
I
think
I
have
in
constantly
finding
new
truths
to
the
extent
that
I
apply
myself
in
looking
for
them.
In
a
word,
if
there
is
in
the
world
some
work
which
cannot
be
properly
completed
by
anyone
other
than
the
same
person
who
started
it,
it’s
the

work
I
do.

It
is
true
that
so
far
the
experiments
which
can
help
in
that
work
are
concerned,
one
man
by
himself
is
not
sufficient
to
undertake
them
all.
But
he
cannot
put
to
practical
use
hands
other
than
his
own,
except
those
of
craftsmen
or
such
people
as
he
can
pay,
who

with
the
hope
of
profit,
which
is
a
very
effective
means,
will
carry
out
everything
exactly
as
he
instructs
them.
As
for
volunteers
who
from
curiosity
or
a
desire
to
learn
perhaps
offer
to
help
him,
apart
from
the
fact
that
ordinarily
they
promise
more
than
they
deliver
and
that
they
come
up
with
nothing

but
fine
propositions,
none
of
which
ever
succeeds,
they
inevitably
want
to
paid
with
the
explanation
of
some
difficulties
or
at
least
with
compliments
and
useless
discussions
which
would
cost
him
more
time
than
he
could
afford.
As
for
the
experiments
which
other
people
have
already
carried
out,
even
though
they
should
be
willing
enough

to
tell
him
about
them,
those
who
call
such
experiments
secrets
will
never
do
that.
Such
experiments
for
the
most
part
contain
so
many
superfluous
circumstances
or
ingredients
that
it
would
be
very
difficult
for
him
to
decipher
the
truth
of
them.
Beyond
that,
he
would
find
almost
all
of
them
badly
explained
or
even

false,
because
those
who
have
carried
them
out
have
forced
themselves
to
make
the
experiment
appear
to
conform
to
their
principles,
so
that
if
there
were
some
experiments
he
could
use,
once
again
it
would
not
be
worth
the
time
he
would
have
to
take
up
to
pick
them
out.
In
the
same
way,
if

there
were
in
the
world
someone
in
whom
people
had
great
confidence
that
he
was
capable
of
finding
the
greatest
things
and
the
most
useful
for
the
public
as
possible,
and
if
for
this
reason
other
men
tried
hard
to
help
him
in
every
way
to
carry
out
his
project
with
success,
I
don't
see

that
they
could
do
anything
for
him
other
than
to
furnish
the
costs
of
the
experiments
he
needed
to
carry
out,
and,
as
to
the
rest,
they
could
prevent
his
leisure
from
being
taken
away
by
anyone's
importunity.
But
beyond
the
fact
that
I
do
not
presume
so
much
of
myself
as
to
wish
to

promise
anything
extraordinary
and
that
I
do
not
indulge
in
thoughts
so
vain
as
to
imagine
to
myself
that
the
pubic
ought
to
show
a
great
deal
of
interest
in
my
plans,
I
do
not
have
a
soul
so
base
that
I
would
be
willing
to
accept
from
anyone
a
favour
which
people
might
think

I
did
not
deserve.

All
these
considerations
combined
were
the
reason,
three
years
ago,
that
I
did
not
wish
to
publish
the
treatise
which
I
had
in
my
hands.
I
even
made
a
resolution
that
during
my
life
I
would
not
make
public
any
other
treatise
which
was
so
general
and
from
which
one

could
learn
the
foundations
of
my
physics.
But,
once
again,
there
have
been
two
other
reasons
since
then
which
have
obliged
me
to
set
down
here
some
particular
essays
and
to
give
the
public
some
account
of
my
actions
and
my
plans.
The
first
is
that
if
I
failed
to
do
this,
several
people
who

knew
of
the
intention
I
had
previously
of
having
some
of
my
writing
published
could
imagine
that
the
reasons
why
I
held
back
from
doing
so
were
more
disadvantageous
to
me
than
they
were.
For
although
I
do
not
like
glory
excessively,
or,
if
I
dare
say
it,
although
I
dislike
it
to
the
extent

that
I
see
it
as
contrary
to
peace
and
quiet,
which
I
value
above
everything,
nonetheless
I
have
also
never
tried
to
hide
my
actions
as
if
they
were
crimes,
nor
have
I
taken
many
precautions
to
remain
unknown,
as
much
because
I
would
have
thought
myself
wrong
if
I
did
so,
as
because
that

would
have
given
me
a
sort
of
unease
which
would,
once
again,
have
been
contrary
to
the
perfect
peace
of
mind
which
I
am
looking
for. Also,
being
always
indifferently
poised
between
care
to
get
known
or
not
to
get
known,
since
I
could
not
prevent
myself
from
acquiring
some
kind
of
reputation,
I
thought
that

I
ought
to
do
my
best
at
least
to
avoid
having
a
bad
one.
The
other
reason
which
obliged
me
to
write
this
is
that
I
realized
more
and
more
every
day
how
the
plan
I
had
to
teach
myself
was
suffering
a
delay,
because
of
an
infinite
number
of
experiments
I
needed
and
because

it
is
impossible
that
I
carry
them
out
without
the
help
of
others.
Although
I
do
not
flatter
myself
so
much
as
to
hope
that
the
public
pays
great
attention
to
my
interests,
nonetheless
by
the
same
token
I
do
not
want
to
let
myself
down
so
much
so
that
I
give
an
excuse
for

those
who
will
come
after
me
to
reproach
me
some
day
by
saying
that
I
could
have
left
many
things
much
better
than
I
did,
if
I
had
not
so
neglected
making
them
understand
the
ways
in
which
they
could
contribute
to
my
project.

And
I
thought
that
it
would
be
easy
for
me

to
chose
some
matters
which,
without
being
subject
to
a
great
deal
of
controversy
and
without
requiring
me
to
state
more
of
my
principles
than
I
wanted
to,
would
permit
me
to
reveal
with
sufficient
clarity
what
I
could
or
could
not
do
in
the
sciences.
In
these
matters
I
cannot
say
if
I
have

been
successful,
and
I
have
no
desire
to
ward
off
anyone's
criticism,
as
I
talk
in
person
about
my
own
writings.
But
I
will
be
very
pleased
if
people
examine
them.
In
order
for
people
to
have
more
chances
to
do
this,
I
request
that
all
those
who
could
have
some
objections
take
the
trouble

to
send
them
to
my
publisher.
If
he
tells
me
about
them,
I
will
try
to
attach
my
response
to
their
objection
and
publish
them
at
the
same
time.
In
this
way,
the
readers,
seeing
the
objections
and
my
replies
together,
will
judge
the
truth
all
the
more
easily.
For
I
promise
never
to
make

long
replies
to
such
objections
but
only
to
confess
my
errors
very
candidly,
if
I
recognize
them,
or
else,
if
I
cannot
see
them,
to
state
simply
what
I
believe
is
required
for
the
defence
of
the
things
I
have
written,
without
adding
there
an
explanation
of
any
new
material,
so
that
I
do
not

get
endlessly
involved
with
one
matter
after
another.
If
some
of
those
things
which
I
have
talked
about
at
the
beginning
of *On Dioptrics* and *On Meteors* are
shocking
at
first,
because
I
call
them
suppositions
and
I
do
not
seem
to
have
any
desire
to
prove
them,
I
urge
people
to
have
the
patience
to
read
the
whole
text

with
attention,
and
I
hope
that
they
will
be
satisfied
with
it.
For
it
seems
to
me
that
the
reasons
follow
there
in
sequence
in
such
a
way
that
the
last
ones
are
established
by
the
first
ones,
which
are
their
causes,
and
the
first
ones
are
reciprocally
established
by
the
last
ones
which
are

their
effects.
And
people
should
not
imagine
that,
in
doing
this,
I
am
committing
the
error
which
logicians
call
arguing
in
a
circle.
For
since
experimentation
makes
most
of
these
effects
very
certain,
the
causes
which
I
have
deduced
do
not
serve
so
much
to
prove
these
effects
as
to
explain
them,
so
the
case

is
precisely
reversed:
it
is
the
causes
which
are
proved
by
the
effects.
And
I
used
the
name
suppositions
for
these
causes
so
that
people
might
know
that
I
think
I
can
deduce
them
from
these
first
truths
which
I
have
explained
above
but
that
I
expressly
wanted
to
avoid
doing
so,
in
order
to

prevent
certain
minds
who
imagine
that
they
understand
in
a
single
day
everything
that
another
man
has
thought
out
in
twenty
years,
as
soon
as
he
has
said
only
two
or
three
words
about
these
matters
to
them,
and
who
are
all
the
more
subject
to
error
and
less
capable
of
truth,
the
more
penetrating

and
bright
they
are,
from
taking
the
opportunity
to
construct
some
extravagant
philosophy
on
what
they
believe
are
my
principles,
and
in
order
to
prevent
people
from
attributing
the
fault
for
that
to
me.
As
for
the
opinions
which
are
entirely
mine,
I
do
not
seek
to
excuse
them
as
new.
To
the
extent
that

people
think
carefully
about
the
reasons
for
them,
I
am
confident
that
they
will
find
my
opinions
so
simple
and
so
consistent
with
common
sense
that
they
will
seem
less
extraordinary
and
less
strange
than
some
others
which
people
might
have
on
the
same
subjects.
And,
in
addition,
I
do
not
boast
that
I
am

the
first
inventor
of
any
of
them,
although
I
have
never
accepted
them
merely
because
they
were
said
by
others
or
because
they
have
not
been
said
by
others,
but
simply
because
reason
persuaded
me
to
accept
them.

If
craftsmen
cannot
immediately
carry
out
the
inventions
explained
in
the *Dioptrics*,
I
do
not
think
that

people
can,
for
that
reason,
say
that
the
text
is
a
poor
one.
For
to
the
extent
that
dexterity
and
skill
are
required
to
make
and
to
adjust
the
machines
which
I
have
described,
without
missing
the
slightest
detail,
I
would
be
no
less
amazed
if
they
were
successful
on
the
first
attempt
than
if

someone
could
learn
in
a
single
day
to
play
the
lute
extremely
well,
simply
because
someone
had
given
him
a
good
musical
score.
And
if
I
write
in
French,
the
language
of
my
country,
rather
than
in
Latin,
the
language
of
my
teachers,
the
reason
is
that
I
hope
those
who
use
only
their
natural

reason,
pure
and
simple,
will
judge
my
opinions
better
that
those
who
believe
nothing
but
ancient
books.
And
as
for
those
who
combine
good
sense
with
study,
who
are
the
only
ones
I
hope
to
have
as
my
judges,
I
am
confident
that
they
will
not
be
so
partial
to
Latin
that
they
will
refuse

to
listen
to
my
reasons
because
I
explain
them
in
the
common
language.

As
for
the
rest,
I
do
not
wish
to
talk
here
in
particular
detail
about
the
future
progress
which
I
hope
to
make
in
the
sciences,
nor
to
commit
myself
to
promising
the
public
what
I
am
not
confident
of
achieving.

But
I
will
only
say
that
I
have
resolved
not
to
use
the
time
remaining
to
me
for
anything
other
than
trying
to
acquire
some
knowledge
of
nature
of
such
a
kind
that
people
can
derive
from
it
rules
for
medicine
more
reliable
that
those
which
they
have
at
present,
that
my
inclination
keeps
me

so
far
away
from
all
kinds
of
other
projects,
mainly
those
which
can
be
practically
useful
to
some
people
only
by
harming
others,
and
that
if
some
circumstance
forced
me
to
use
my
time
in
this
way,
I
do
not
think
I
would
be
capable
of
succeeding
in
it.

In
saying
this,
I
am

making
a
declaration
here
which
I
well
understand
cannot
make
me
important
in
the
world,
but
also
I
have
no
desire
to
be
important.
I
will
always
hold
myself
more
obliged
to
those
by
whose
favour
I
enjoy
my
leisure
unencumbered
than
to
those
who
might
offer
me
the
most
prestigious
positions
on
earth.

**NOTES**

(1) This heading does not appear in Descartes' text. **[Back to Text]**

(2) The word "science" in Descartes' vocabulary means any formally organized theoretical knowledge. It does not refer merely to the natural sciences. **[Back to Text]**

(3) The word "parricide" may seem odd here, but it refers to acts committed

against one's own family in the name of justice (i.e., a love of justice so strong that one is willing to kill members of one's own family who have done wrong). With certain pagan moralists, such acts were considered particularly virtuous. **[Back to Text]**

(4) In 1618 Descartes, who was Catholic, voluntarily joined the Protestant

army of Maurice of Nassau, who was active in organizing the forces of the Dutch Republic in its fight with Spain. **[Back to Text]**

(5) Ramon Llull was a thirteenth-century philosopher who wrote a rational defence of Christianity. **[Back to Text]**

(6) Descartes' *Principia Philosophiae*, 1:45-6, discusses (in Latin) his use of these terms: "I call an

idea
clear
(*claram*)
when
it
is
present
and
manifest
to
a
mind
focusing
on
it,
just
as
we
say
we
perceive
something
clearly
when
it
is
present
to
the
observing
eye,
and
stimulates
it
sufficiently
strongly
and
fully.
I
call
an
idea
distinct
(*distinctam*)
which,
while
it
is
clear,
is
separated
and
marked
off
from

everything else in such a way that it consists of absolutely nothing which is not clear." It may be that Descartes has in mind the clarity and distinctiveness of geometrical propositions. [Back to Text]

(7) Descartes here is referring to his discoveries in analytic geometry, in which algebraic equations are represented geometrically. [Back to Text]

(8) In the same book as this *Discourse*, Descartes included sections on optics, geometry, and meteorology. **[Back to Text]**

(9) That is, in Holland. The "nine years" Descartes refers to earlier are 1619-1628. **[Back to Text]**

(10) In a later work this statement "I think; therefore, I am" (*je pense, donc je suis*) becomes the famous Latin sentence *Cogito ergo*

*sum*. As the subsequent lines in the discussion above indicate, this claim might be more properly translated "I am thinking; therefore, I am," since the certainty remains only during the process of thinking. **[Back to Text]**

(11) A *chimera* is a mythological Greek monster, made up of different animals. **[Back to Text]**

(12) Descartes is here describing

a thought experiment in which he imagines how the world might have developed historically from material distributed randomly in the universe. The idea is potentially dangerous because it goes against the description given in Genesis. Hence, later on Descartes explicitly denies that he is claiming the process he is summarizing actually took place. **[Back to Text]**

(13) Here Descartes is again coming close to potentially dangerous speculations. To propose that God's actions in developing the world are subject to natural laws, even if God is the origin of those laws, is to suggest that there are some restrictions on God's later actions (i.e., His interventions and actions in the world must

conform to those laws). However, the value of thinking about the development of the world as a historical process guided by laws (rather than as the product of the divine miracle of Creation) is that it enables human beings to come to a rational understanding of nature and thus makes the modern scientific study of

nature possible, even if only in a thought experiment. [Back to Text]

(14) *vena arteriosa*: arterial vein, now called the pulmonary artery. [Back to Text]

(15) The English doctor is William Harvey who published his pioneering work on the heart and circulation of the blood in 1628. [Back to Text]

(16) Descartes here announces the

most challenging issue arising from his views. If the body is mechanical and the soul is not and if they must interact in some way, then how does that interaction takes place? How can one explain consciousness in mechanistic terms? This is still the thorniest problem in modern biology. **[Back to Text]**

(17) *someone else*:

a reference to Galileo, whose publication in defence of Copernicus' sun centered model of the solar system (in 1632) got him into serious difficulties with the church. **[Back to Text]**

(18) In this famous statement Descartes makes clear one of the major purposes of the new natural philosophy (science): to gain power over nature. **[Back to Text]**

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